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# **Economic Supporting Data**

USC.G.-46-3868-11

## **Notice of Proposed Rulemaking**

### *OUTER CONTINENTAL SHELF ACTIVITIES*

33 CFR subchapter N

**December 1999**

Prepared by United States Coast Guard  
Office of Standards Evaluation and Development  
Standards Evaluation Division (G-MSR-1)

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## EXECUTIVE SUMMARY

The Coast Guard proposes a major revision of its regulations on Outer Continental Shelf (OCS) activities. In 1982, when 33 CFR subchapter N was published (47 FR 9376), the offshore industry was new and the technology and equipment being used was simple compared to today's standards. Offshore activities were in relatively shallow water and near land, where help was readily available during emergency situations. At that time, the equipment regulations required only basic equipment, primarily for lifesaving appliances and hand portable fire extinguishers. Since original publication, the requirements of subchapter N have not kept pace with the changing offshore technology or the safety problems it creates as OCS activities expand to deeper water (7,500 feet) and move further offshore (127 miles). The proposed revision will improve the level of safety in the workplace for personnel engaged in OCS activities.

Subchapter N regulations apply to all activities occurring on the OCS. The types of unit that engage in OCS activities are diverse and include fixed facilities, floating facilities, mobile offshore drilling units, mobile inland drilling units, and vessels (i.e., offshore supply vessels, industrial vessels, pipe lay barges, and derrick barges). The proposed rule is a comprehensive effort to provide a complete rulemaking package to meet the needs of today's OCS, with sufficient flexibility to handle tomorrow's emerging technology. The primary changes for OCS units are in workplace safety and health, lifesaving, fire-fighting, and fire-protection equipment, and structural fire protection.

The benefit-to-cost ratio for this proposed rule is .86-to-1. The cost of the rule in present value dollars over the 10-year period of analysis (2000-2009) is \$82.8 million, which includes \$81.9 million in costs to industry and \$0.9 million in costs to the government. The present value benefits in the form of avoided deaths, injuries, and accidents are \$71 million.

The component parts of the proposed rule have the following benefit-to-cost ratios: 1) Part 142, 10.5-to-1; 2) Part 143, .28-to-1; and 3) Parts 144 through Parts 146, which account for approximately 2 percent of the costs, have benefits expressed qualitatively.

The Coast Guard included several measures to accommodate small entities and others affected by this proposed rule with phase-in periods, exemptions, and options to meeting some proposed requirements.

## INTRODUCTION

The Outer Continental Shelf Lands Act of 1978 (the Act)(Pub. L. 95-372) expanded the Coast Guard's authority and responsibility to implement regulations to improve safety for offshore personnel. In 1982, when 33 CFR subchapter N was published (47 FR 9376), the offshore industry was new and the technology and equipment being used was simple compared to today's standards. Offshore activities were in relatively shallow water and near land, where help was readily available during emergency situations. At that time, the equipment regulations required only basic equipment, primarily for lifesaving appliances and hand portable fire extinguishers. Since original publication, the requirements of subchapter N have not kept pace with the changing offshore technology or the safety problems it creates as OCS activities expand to deeper water (7,500 feet) and move further offshore (127 miles).

Subchapter N regulations apply to all activities occurring on the OCS. You will find many terms used throughout this analysis that are unique to the offshore industry. Please refer to Appendix A to see how these terms are defined by the proposed rule. The types of unit that engage in OCS activity are diverse and include fixed facilities, floating facilities, mobile offshore drilling units (MODUs), mobile inland drilling units (MIDUs), and vessels (i.e. offshore supply vessels (OSVs), industrial vessels, pipe lay barges, derrick barges). The proposed rule is a comprehensive effort to provide a complete rulemaking package to meet the needs of today's OCS, with sufficient flexibility to handle tomorrow's emerging technology. The primary changes for OCS units are in:

- Workplace safety and health,
- Lifesaving, fire-fighting, and fire-protection equipment, and
- Structural fire protection.

While drafting the proposed rule, we considered the following:

- Current Occupational Safety and Health Administration (OSHA) and Minerals Management Service (MMS) requirements applicable to the OCS.
- Public comments.
- Feedback from the National Offshore Safety Advisory Committee (NOSAC).
- Industry standards currently being used on the OCS.
- Differences between unit types.
- Discrepancies between foreign unit requirements and U.S. unit requirements.
- Economic impact to the OCS industry.

When you review the proposed rule, you will note that the substance of many current OCS regulations remains unchanged. The following is a list of parts identifying where you will find proposed changes that impact the industry.

Part 140	No changes that impact the industry costs.
Part 141	No changes that impact the industry costs.
Part 142	Contains 17 changes which impact costs. General categories are training, personal fall arrest systems, and confined-space entry.
Part 143	Contains 28 changes which impact costs. General categories are lifesaving equipment, fire-fighting and fire-protection equipment, and structural fire protection.
Part 144	Contains 5 changes which impact costs.
Part 145	Contains 3 changes which impact costs.
Part 146	Contains 2 changes which impact costs.
Part 147	No changes that impact the industry costs.

While drafting the proposed rule, we were very aware of the economic impact to industry. We discovered that some components included in draft versions were not cost-effective, without sufficient benefit to justify it. To the extent possible, we removed or modified requirements to make the rule more cost efficient. Here are a few examples:

- Hospital Space. Original drafts required manned fixed facilities to have a dedicated hospital space with appropriate medical personnel onboard in the event of an emergency. In the process of drafting, we narrowed the requirement from all OCS units to the ones with the greatest need for such a space-- the manned fixed facilities with accommodation space for 12 or more personnel. We also removed the requirement that the space be dedicated to medical treatment only, to allow it to serve other functions when not in use treating or isolating personnel for medical issues. Proposed § 143.1321 is an excellent, low-cost alternative. It requires a space where personnel can receive basic first aid or be isolated while awaiting evacuation to a land-based medical facility.
- Automated defibrillators. Original drafts included defibrillators on OCS units to provide emergency treatment to personnel in the event of cardiac arrest. Extensive damage or death resulting from cardiac arrest is a greater risk as OCS activities move further offshore, and farther away from land-based medical facilities capable of handling this kind of emergency. The defibrillator was included in equipment needs for the hospital space, with the trained personnel. When we modified the hospital space requirement, we realized the equipment and trained personnel capable of handling cardiac emergencies were no longer readily available. We considered

requiring automated defibrillators, which can be operated safely by the emergency medical treatment personnel onboard a unit. This was very costly and we searched for other alternatives. After much consideration, we determined that trained personnel could perform cardiopulmonary resuscitation (CPR) in transit on a helicopter or while awaiting the arrival of a Medivac helicopter. We removed the defibrillator requirement entirely.

- Offshore Competent Person. The proposed requirement assists industry by providing the option to obtain or train an Offshore Competent Person, rather than have a certified marine chemist brought in every time work is needed in a confined space. We considered the nature of the work and established the criteria for the training. Original drafts required an Offshore Competent Person on each facility. We considered the expense, and modified the rule to only require the Offshore Competent Person onboard when work in a confined space is being done. This would allow the owner or operator to transfer an Offshore Competent Person between several facilities, scheduling the work in confined space for the time when he/she is onboard. This will provide substantial savings to industry.

## **REGULATORY EVALUATION**

We determined that this proposed rule is not a significant regulatory action as defined in Executive Order 12866. It requires an assessment of potential cost and benefits and is not significant under the regulatory policies and procedures the Department of Transportation Order 2 100.5. The total effect on the economy is less than \$100 million annually. A full Regulatory Assessment is not required. The purpose of this analysis is to:

- Analyze the economic consequences of this rulemaking on the U.S. Government and Industry.
- Determine the economic impact of the rulemaking on small entities, as required by the Regulatory Flexibility Act (5 U.S.C. 603).

Costs, benefits, and supporting narratives are grouped and presented in the order they appear in the proposed rule.

### **Scope**

We estimate this proposed rule would affect all areas of OCS activity. Work conducted on the OCS is diverse and tends to use specialized units, some quite novel in design and specific in purpose (i.e., pipe lay barges). The proposed rule applies to all units engaged in OCS activity. You will find the unit population figures used for this analysis in Table 1.

**Table 1. Estimate of affected offshore industry population.**

Type of unit	Number of units
Manned fixed facilities	789
U.S. floating facilities	7
Foreign floating facilities	1
MIDUs	4
U.S. MODUs	118
Foreign MODUs	68
New build manned fixed facilities per year	30
OSVs	513
Industrial vessels active on the OCS	50
Foreign vessels active on the OCS	70
Unmanned fixed facilities	2,700

## **Cost to the Offshore Industry**

In this section, we detail the proposed requirements that will have a cost impact to industry. First we explain what methodology and general assumptions we used. Then we itemize the costs by part, in the order they appear in the rule. We discuss basic information on each requirement, followed by a summary table for that part. The table includes any additional assumptions we applied to a specific requirement to determine the implementation or recurring cost for that item.

### **General Assumptions:**

1. We estimate the average number of new build manned OCS facilities is 30 per year<sup>1</sup> and that 30 fixed facilities will be phased out each year. For the purpose of this analysis, we have a constant fixed facility population.
2. We estimate the average number of persons onboard a manned fixed facility is 14.<sup>2</sup>
3. In accordance with current Office of Management and Budget guidance, the net present value of both costs and benefits developed for this proposed rule is calculated with a discount rate of 7 percent. The present values (PV) are expressed in 1999 dollars.
4. First-year costs were calculated for year 2000, and 2-year phase-in costs were calculated for 2001, the year the rule is expected to be fully implemented. Recurring costs were calculated through the year 2009.

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<sup>1</sup> Average based on MMS's estimate of the potential number of new builds per year over the next 35 years.

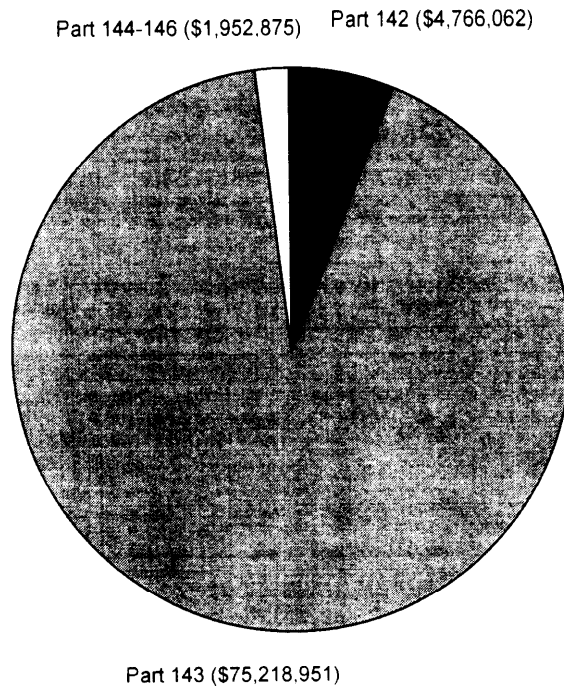
<sup>2</sup> Estimated facility population by Coast Guard (G-MSO).

## Methodology

Costs incurred by the industry under this proposed rule are comprised of first-year one-time costs, 2-year phase-in costs, and recurring costs to all OCS units and new build manned fixed facilities involving workplace safety and health, lifesaving, fire-fighting, and fire-protection equipment.

The following pie chart illustrates the cost components of the proposed rule. Together Part 142 (Workplace Safety and Health) and Part 143 (Fixed Facilities) comprise \$80 million (present value) or 98 percent of the total industry cost. Parts 144-146 (floating facilities, MODUs and MIDUs, and foreign vessels) comprise the remaining \$1.9 million (present value) or 2 percent of the total industry cost.

**OCS Subchapter N Cost Components**  
**(Ten-year Present Value Cost Projection: \$81,937,888)**





## Industry Costs

### ***PART 142 – OUTER CONTINENTAL SHELF ACTIVITIES: WORKPLACE SAFETY AND HEALTH***

When determining the total cost in this part, we calculated the majority of the costs based on four unit types: manned fixed facilities, floating facilities, MODUs, and MIDUs. For ease of reference, they are collectively called “OCS units.” Since offshore supply vessels, industrial vessels, unmanned fixed facilities, and foreign vessels are subject to other regulations or other parts of this rule, to avoid double-counting their compliance cost, they were excluded from many of the costs for with part 142.

**Table 2. Unit population and personnel figures for calculating the industry cost of Part 142.**

Type of unit	Number of units
Manned fixed facilities	789
U.S. floating facilities	7
Foreign floating facilities	1
MIDUs	4
U.S. MODUs	118
Foreign MODUs	68
<b>Total OCS units<sup>1</sup></b>	<b>987</b>
Type of personnel	Number of personnel
Unit personnel <sup>2</sup>	18,966
OCS personnel <sup>3</sup>	25,818

1 For the purpose of cost assessment of Part 142, the term “OCS units” applies to manned fixed facilities, floating facilities, MIDUs, and MODUs.

2 “Unit personnel” applies to personnel onboard manned fixed facilities, floating facilities, MODUs, and MIDUs. This figure represents the number of personnel on the “OCS units.”

3 “OCS personnel” includes all personnel engaged in OCS activity. See Appendix B for further details.

In 1991, the MMS introduced the Safety and Environmental Management Program (SEMP) as a voluntary approach to improving safety and environmental protection on OCS facilities. In 1996, MMS conducted a comprehensive survey of the offshore industry, to determine the effectiveness of SEM. Ninety-six percent of all OCS operators responded, which represented over 99 percent of total OCS oil and gas production at that time. The results of the survey indicated that OCS operators have SEM plans or were well on their way to implementing SEM plans. Based on this information, for the purpose of this analysis, we assumed that 95 percent of the owners or operators currently meet the proposed workplace safety and health requirements proposed in Part 142.

### *Subpart A--General*

**Information and training on recognized hazards in the workplace.** Proposed § 142.20 would require each holder of a lease or permit on the OCS to inform and train all OCS personnel to recognize hazards in the workplace. This includes, but is not limited to, electrical, mechanical, and chemical hazards. We estimate the cost is \$185 per person.

**Training in emergency response and cleanup.** Proposed § 142.25 would require each holder of a lease or permit on the OCS to train all OCS personnel in emergency and cleanup actions. This includes actions they are expected to take, knowledge of hazards associated with each emergency, the safety of others, and the selection of and proper use of personal protection equipment. We estimate the initial cost is \$595 per person and the annual recurring cost is \$240 per person.

### *Subpart B--Personal Protective Equipment on OCS Facilities*

**Training in personal protection equipment.** Proposed § 142.110 would require each holder of a lease or permit on the OCS to train all OCS personnel in the proper use, limitations, and maintenance of personal protection equipment. We estimate the cost is \$185 per person.

**Hearing protection.** Proposed § 142.135 would address a gap in current requirements for personal protective equipment. It would require the owner or operator to provide hearing protectors for all personnel when working in an area where the noise level is greater than 87db(A), as measured by a time-weight-average over 12 hours. We estimate the cost is \$50 per person.

**Training in electrical safety.** Proposed § 142.145 would require the owner or operator to train all OCS personnel in safety-related work practices to prevent electrical-related injury. This training would include the use of electrical personal protection equipment, insulated tools, and alerting techniques. We estimate the cost is \$150 per person.

**Training in the use of a personal fall arrest system.** Proposed § 142.156 would require the owner or operator to train OCS personnel in the proper use of a personal fall arrest system. Proposed § 142.157 would require upgraded fall arrest system equipment (discussed below). Together, the new equipment and appropriate training should reduce the frequency and severity of falls on the OCS. We estimate the cost for training is \$180 per person.

**Fall arrest system upgrade.** Proposed § 142.157 would require the owner or operator to take any existing safety belt and lifeline systems in use and upgrade them to a personal fall arrest system(s) that meet the American National Standards Institute (ANSI) Safety Requirements for Personal Fall Arrest Systems, Subsystems, and Components (ANSI Z359.1-1992). We estimate the cost is \$500 per unit.

**Naturally occurring radioactive material (NORM) program.** The potential exposure to NORM during routine operations does exist for some OCS units. Proposed § 142.179 would require the owner or operator to establish a program to reduce the risk of NORM exposure for OCS personnel and the environment. We estimate the cost is \$18,000 per unit.

**Blood-borne pathogen or other infectious material program.** Proposed § 142.185 would require the owner or operator to establish a written program to prevent exposure from blood-borne pathogens or other infectious material for first aid or emergency medical treatment (EMT) OSC personnel. The program should detail equipment, procedures, and training. We estimate the cost is \$500 per unit.

**Training to prevent exposure from blood-borne pathogens or other infectious material.** Proposed § 142.185 would require the owner or operator to train first aid or EMT OSC personnel to prevent exposure from blood-borne pathogens or other infectious material. This training should cover the facility's written program, procedures, equipment, and its proper use. We estimate the implementation and recurring cost is \$165 per person.

#### *Subpart C--General Workplace Conditions on OCS Facilities*

**Noise level survey.** Proposed § 142.235 would require the owner or operator to conduct a noise level survey to determine each area's maximum noise level during normal operations. This information would affect the placing of signs requiring personnel to wear hearing protectors (under proposed § 142.135). We estimate the cost is \$1,600 per facility.

**Machine guards.** Proposed § 142.245 would require the owner or operator to provide machine guards on all exposed rotary, reciprocating, and other hazardous parts of machines to protect OCS personnel from bodily hazards while using the machine. We estimate the cost is \$200 per facility.

**Warning signs.** Proposed § 142.285 would require the owner or operator to color-code all new signs and replacement signs marking physical hazards. Standardization will draw quick attention to potential hazards and more accurately alert OCS personnel to the danger presented. We estimate the cost is \$300 per facility.

#### *Subpart D--Confined-space Entry*

**Training in confined-space entry.** Proposed § 142.360 would require that the person in charge should ensure that all OCS personnel who would enter a confined space are trained. This training would include the facility's written program proposed in § 142.375, precautions, procedures, equipment, and its use. We estimate the cost is \$300 per person.

**Offshore Competent Person.** Proposed § 142.370 would require the owner or operator to have a trained Offshore Competent Person on an OCS unit during confined-space entry, to ensure that OCS personnel undertake confined-space entry safely and in compliance with the written program proposed in § 142.375. Training would consist of two (2) college chemistry courses, industrial hygiene sampling and analysis, and confined-space entry with an annual refresher course. Since work in confined space is usually scheduled in advance and an Offshore Competent Person is not required onboard a facility at all times, we expect owners and operators will rotate the individual between facilities, as needed. We assume that 50 percent of OCS units will train an Offshore Competent Person. We estimate the initial cost is \$2,100 per person and the annual recurring cost is \$300 per person.

**Confined-space entry program.** Proposed § 142.375 would require the owner or operator to establish a written program for confined-space entry, which would detail precautions and procedures for entering an unventilated space, or other space likely to contain a dangerous atmosphere. We estimate the cost is \$4,000 per facility.

*Subpart E--Hazardous Material on OCS Facilities*

**Hazard communication program.** Proposed § 142.410 would require the owner or operator to establish a written hazard communication program to ensure all OCS personnel are aware of what materials are hazardous, what the hazards are, and the procedures to prevent unnecessary exposure. We estimate the cost is \$4,000 per facility.

**Table 3. Itemized Industry Costs for 33 CFR subchapter N, part 142**

The following notes apply to the proposed workplace safety and health requirements. You will find applicable references in the Assumption(s) column:

Note (1) Apply assumption for MMS's "Safety and Environmental Management Program" (SEMP). Industry survey shows that 95 percent of OCS units and personnel engaged in OCS activities comply with the proposed workplace safety and health requirements. This is due to voluntary adoption of SEMP. Thus, 5 percent of the affected population would incur cost to comply (affected population x .05).<sup>3</sup>

Note (2) Apply assumption for attrition. The Coast Guard estimates that OCS owners/operators experience approximately 10 percent turnover rate for personnel. We assume that 95 percent are rehired in similar positions. Of that 95 percent, we estimate approximately 5 percent will require additional training to comply (affected population x .10 x .95 x .05).

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year   New Builds		2-yr phase-in   Annual	
Information and training on recognized hazards in the workplace (§ 142.20).	Requirement includes, but is not limited to, electrical, mechanical, and chemical hazards.  Cost: \$185 per person.	Applies to all OCS personnel (25,818).  See Note (1) and (2).	\$238,835 (1,291 x \$185) 1,291 OCS personnel (25,818 x .05)	None	None	\$22,755 (123 x \$185) 123 OCS personnel (25,818 x .10 x .95 x .05)
Training on emergency response and cleanup action (§ 142.25).	Includes knowledge of hazards, selection of and proper use of equipment.  Cost: \$595 per person for initial training; \$240 per person annually thereafter.	Applies to all OCS personnel (25,818).  See Note (1) and (2).	\$768,145 (1,291 x \$595) 1,291 OCS personnel (25,818 x .05)	None	None	\$29,520 (123 x \$240) 123 OCS personnel (25,818 x .10 x .95 x .05)
Training in personal protective equipment (§ 142.110)	Includes proper use, limitations, and maintenance of equipment.  Cost: \$185 per person.	Applies to unit personnel (18,966).  See Note (1) and (2).	\$175,380 (948 x \$185) 948 unit personnel (18,966 x .05)	None	None	\$16,650 (90 x \$185) 90 unit personnel (18,966 x .10 x .95 x .05)

<sup>3</sup> According to the American Petroleum Institute's 1996 Implementation Surveys, of the 99 percent of OCS operators that responded to the surveys, 96 percent have SEMP plans in place or were in the process of implementing them.

**Table 3. Itemized Industry Costs for 33 CFR subchapter N, part 142 (continued)**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Hearing protection (§ 142.135)	Hearing protectors when working in areas subject to a noise level greater than 87db(A), as measured by a time-weight-average over 12 hours. Cost: \$50 per person.	Applies to unit personnel (18,966). See Note (1) and (2).	\$47,400 (948 x \$50) 948 unit personnel (18,966 x .05)	None	None	\$4,500 (90 x \$50) 90 unit personnel (18,966 x .10 x .95 x .05)
Training in electrical safety (§ 142.145)	Safety-related work practices, including the use of electrical personal protection equipment, insulated tools, and alerting techniques. Cost: \$150 per person.	Applies to unit personnel (18,966). See Note (1) and (2).	\$142,200 (948 x \$150) 948 unit personnel (18,966 x .05)	None	None	\$13,500 (90 x \$150) 90 unit personnel (18,966 x .10 x .95 x .05)
Training in use of fall arrest system (§ 142.156)	Training in the proper use of a personal fall arrest system. Cost: \$180 per person.	Applies to unit personnel (18,966). See Note (1) and (2).	\$170,640 (948 x \$180) 948 unit personnel (18,966 x .05)	None	None	\$16,200 (90 x \$180) 90 unit personnel (18,966 x .10 x .95 x .05)
Personal fall arrest system upgrade (§ 142.157)	Upgrade of equipment to meet industry standard. Cost: \$500 per unit.	Applies to OCS units (987). Approximately 60 percent of OCS units need to upgrade (987 x .60)	\$296,000 (592 units x \$500)	None	None	None
Naturally occurring radioactive material (NORM) program (§ 142.179)	Establish a program to reduce the risk of radioactive exposure to personnel and the environment. Cost: \$18,000 per unit.	Applies to OCS units (987). Approximately 10 percent of OCS units have NORM levels requiring a program (987 x .10). See Note (1).	\$90,000 (5 x \$18,000) 5 OCS units (99 x .05)	None	None	None
Blood-borne pathogen or other infectious material program (§ 142.185)	Includes a written program to prevent exposure that describes training, procedures, and equipment. Cost: \$500 per unit.	Applies to OCS units (987). See Note (1).	\$24,500 (49 x \$500) 49 OCS units (987 x .05)	None	None	None

**Table 3. Itemized Industry Costs for 33 CFR subchapter N, part 142 (continued)**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Training to prevent exposure from blood-borne pathogens or other infectious material (§ 142.185)	Training for first aid or emergency medical treatment (EMT) personnel, includes methods or procedures to prevent exposure.  Cost: \$165 per medical person, per year.	Applies to OCS units (987).  Affects two (2) medical personnel per facility.  See Note (1).  Recurring cost - 10% of the estimated units will train 2 persons annually.	\$16,170 (98 people x \$165)  98 unit personnel (49 x 2 people)  49 OCS units (987 x .05)	None	None	\$1,650 (10 people x \$165)
Noise level survey (§ 142.235)	Survey necessary to determine noise levels and identify areas where hearing protectors are required.  Cost: \$1,600 per unit.	Applies to OCS units (987).  See Note (1).	\$78,400 (49 x \$1,600)  49 OCS units (987 x .05)	None	None	None
Machine guards (§ 142.245)	Provide machine guards on all exposed rotary, reciprocating, and other hazardous parts of machines.  Cost: \$200 per unit.	Applies to OCS units (987).  See Note (1).	\$9,800 (49 x \$200)  49 OCS units (987 x .05)	None	None	None
Warning signs (§ 142.285)	All new signs and replacement signs for marking physical hazards must be color coded.  Cost: \$300 per unit.	Applies to OCS units (987).  See Note (1).	\$14,700 (49 x \$300)  49 OCS units (987 x .05)	None	None	None
Training for personnel required to work in confined space (§ 142.360)	Includes identification of known hazards, procedures, and use of protective equipment.  Cost: \$300 per person.	Applies to all OCS units (987).  Affects four (4) personnel per unit.  See Note (1).	\$58,800 (196 x \$300)  196 unit personnel (49 x 4 people)  49 OCS units (987 x .05)	None	None	\$5,700 (19 x \$300)  19 unit personnel (987 x 4 people x .10 x .95 x .05)

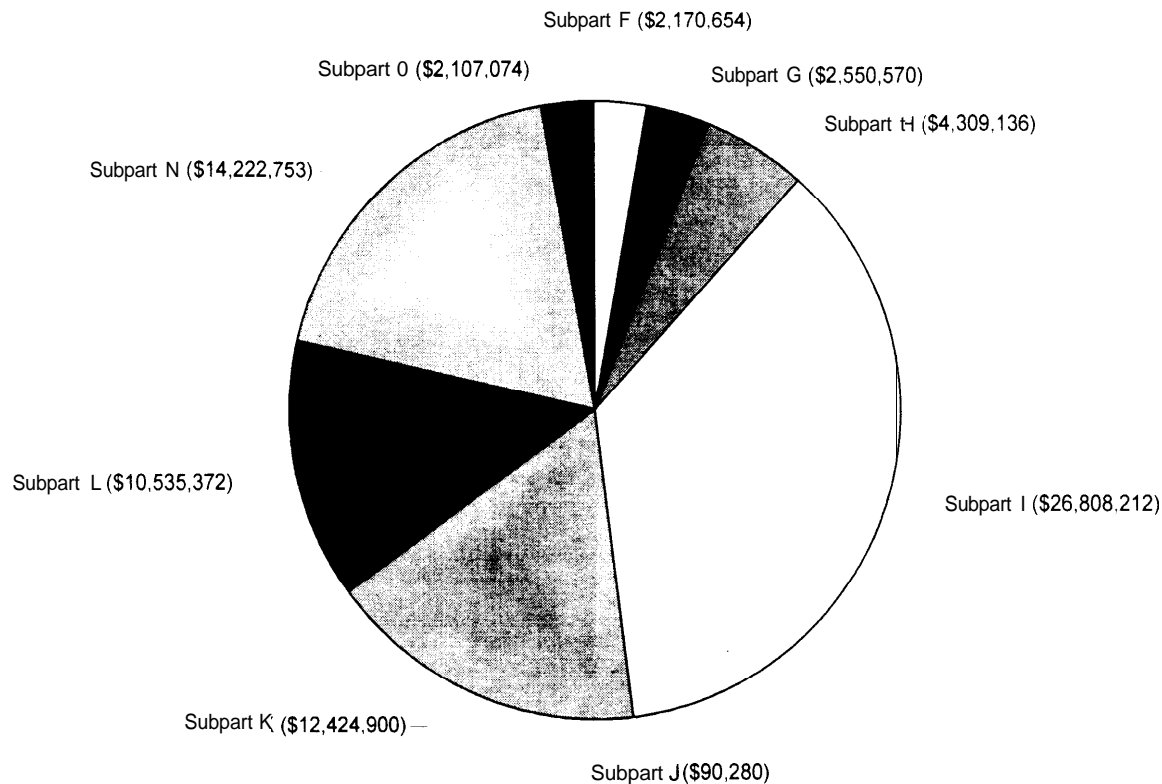
**Table 3. Itemized Industry Costs for 33 CFR subchapter N, part 142 (continued)**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Offshore competent person (\$ 142.370)	Training includes two (2) college chemistry courses, industrial hygiene sampling and analysis, and confined space entry. Refresher required annually. Cost: \$2,100 per person for initial training, \$300 per person annually thereafter.	Applies to OCS units (987). See Note (1) Approximately 50 percent of units will need to train an offshore competent person.	\$1,037,400 (494 x \$2,100) 494 unit personnel (987 x .50 x 1 person)	None	None	\$148,200 (494 x \$300) 494 unit personnel (494 x 1 person)
Confined-space entry program (\$ 142.375)	Establish a written program including precautions for entering unventilated spaces. Cost: \$4,000 per unit.	Applies to OCS units (987). See Note (1).	\$196,000 (49 x \$4,000) 49 OCS units (987 x .05)	None	None	None
Hazard communication program (\$ 142.410)	Written program includes identification of materials, their potential hazards, protective measures and equipment, and the use, handling, and storage of the material. Cost: \$4,000 per unit.	Applies to OCS units (987). See Note (1).	\$196,000 (49 x \$4,000) 49 OCS units (987 x .05)	None	None	None



## ***PART 143 – OUTER CONTINENTAL SHELF ACTIVITIES: FIXED FACILITIES***

### **Part 143: Fixed Facilities (Ten-Year Present Value Cost Projection: \$75,218,951)**



Part 143 comprises the largest percentage of requirements that impact cost to industry. The above pie chart shows breakdown of cost components by subpart. Subparts F, G, H include training and instruction, equipment inspection, and maintenance; subparts I and J include lifesaving equipment; subparts K and L include fire-fighting and fire-protection equipment, and structural fire protection; subpart N includes design and equipment; and subpart O includes certification. The lifesaving, fire-fighting, and fire-protection equipment components comprise \$49.9 million (present value) or 66 percent of this part.

#### ***Subpart E--Drills on Manned Fixed Facilities***

**Fire drills.** Proposed § 143.420 would require the owner or operator to have a monthly fire drill in addition to the current requirement for an emergency drill (or emergency evacuation drill). The majority of manned fixed facilities perform fire drills, running them into the drill sequence they schedule. We assume the cost of this proposed requirement is so minimal, perhaps even a no cost item, since the fire drill may be run in succession with other emergency drills. We estimate the cost is \$0 per facility.

### ***Subpart F--Onboard Training and Instruction for Manned Fixed Facilities***

**Lifesaving and survival instruction and training.** Proposed § 143.510 would require the owner or operator to provide all OCS personnel with instruction in lifesaving procedures. This would include initial offsite instructions in lifesaving procedures, such as survival training, in the use of facility's lifesaving equipment, and in duties assigned to that person under the station bill. Additional refresher training would be provided by trained personnel onsite at a minimal cost, which is a common industry practice. We estimate the cost is \$5,880 per facility.

### ***Subpart G--Maintenance and Repair of Lifesaving, Fire-Fighting, and Other Emergency Equipment on Manned Fixed Facilities***

**Maintenance of survival craft falls.** Proposed § 143.620 would require the owner or operator to renew when necessary due to deterioration or at intervals of not more than 5 years the falls used in a launching device for survival craft or rescue boats on a manned OCS facility. This would prevent the failure of falls due to corrosion and other deterioration. We estimate the cost of replacing falls is \$2,500 per set of falls replaced and recurring costs are \$2,500 per facility every 5 years.

### **Maintenance of lifeboats and rescue boats launching appliances and release gears.**

Proposed § 146.625 and 146.630 would require the owner or operator of a manned fixed facility with a lifeboat or rescue boat to test the launching appliances and release gears at least every 5 years to ensure proper operation in the event of an emergency. We estimate the initial cost is \$500 per facility and the recurring cost is \$500 per facility.

### ***Subpart H--Tests and Inspections of Lifesaving, Fire-Fighting, and Other Emergency Equipment on Manned Fixed Facilities***

**Equipment inspections.** Proposed §§ 143.720 through 143.730 requires the owner or operator to conduct weekly, monthly, semi-annual, or annual inspections for lifesaving equipment, fire-fighting equipment, and emergency lighting and power systems. These inspections will be performed during self-inspection for a manned fixed facility and ensure an increased level of safety for personnel. We estimate the annual cost is \$900 per facility.

**Annual maintenance of survival craft.** Proposed § 143.730(a) would require the owner or operator of a manned fixed facility to have their lifeboats, rigid life rafts and rescue boats stripped, cleaned, and thoroughly inspected and refurbished if necessary, at least once a year. This would ensure they are operational and ready for use in an emergency. We estimate the cost is \$500 per facility.

**Installation weight testing for survival craft.** Proposed § 143.735 would require the owner or operator of a manned fixed facility to perform weight testing for each new survival craft and davit-launched life raft system when either new or relocated. This would ensure the delivery system is operational and ready for emergency use. We assume the cost of installation weight testing would be captured in the initial cost of purchasing and installing a survival craft and that survival craft are rarely relocated. We estimate the cost is \$0 per facility (no cost).

**Periodic weight testing for survival craft.** Proposed § 143.740 would require the owner or operator of a manned fixed facility to perform periodic weight testing of survival craft falls if a survival craft has a fall replaced or every 5 years, whichever ever comes first. This would ensure the delivery system is operational and ready for use in an emergency. We estimate the cost is \$500 per facility.

### ***Subpart I--Lifesaving Equipment on Manned Fixed Facilities***

**Survival craft and rescue boats.** Proposed § 143.826 would require the owner or operator of a manned fixed facility to have survival craft and rescue boats. The type and number required would be dependent on the facility's location and population. Due to the continuous evolution of OCS activities that allow operations to occur farther from shore and in deeper water, it is necessary to provide a method of keeping personnel out of the water if evacuation or abandonment becomes necessary. In coming up with an estimate cost for this requirement, we used the following assumptions:

1. We estimate that 40 percent of manned fixed facilities are within a safe haven (WSH), which means they are within 3 nautical miles of another manned facility or vessel capable of rescuing personnel. The proposed requirements for facilities WSH include life floats and lifeboats.
2. We estimate that 60 percent of manned fixed facilities are beyond a safe haven (BSH), which means they are 3 nautical miles (or more) away from another manned facility or vessel capable of rescuing personnel. The proposed requirements for facilities BSH include life rafts, lifeboats, and rescue boats.
3. We surveyed a sample of owners or operators (owning a large population) of affected facilities to determine an accurate percentage of how many facilities currently meet the proposed requirement for survival crafts and rescue boats. We determined that fixed facility owners or operators are in complete compliance with life float requirements, and 67 percent meet the proposed lifeboat requirement. So, we estimate that 33 percent will incur cost to meet this requirement.
4. The proposed requirement for rescue boats would allow a lifeboat to be used as a rescue boat, if they meet the rescue boat requirements. We assume that current lifeboats and any new lifeboats purchased would meet the requirements for rescue boats. Therefore, we estimate that no additional rescue boats would be required.

We present the cost estimate for this requirement both WSH and BSH since the requirements are significantly different for the two locations. We estimate the cost is \$26,000 per life raft with an additional \$5,000 for installation, and \$100,000 per lifeboat with an additional \$10,000 for installation.

**Life jacket whistle.** Proposed § 143.845 would require the owner or operator of a manned fixed facility to have a whistle attached to each life jacket on the facility. The whistle must be corrosive resistant and in good working order; it may be a ball-type or multi-tone type whistle. The whistle would increase the ability to locate and rescue personnel in the water. We estimate

each manned fixed facility would have 20 life jackets onboard with a cost of 50-cents per whistle. We estimate the cost is \$10 per facility.

**Ring life buoy buoyant lines.** Proposed § 143.850 would require the owner or operator of a manned fixed facility to attach a 100-foot buoyant line, with a breaking strength of at least 1,124 pounds, to each ring life buoy on the facility. This would facilitate the rescue of a person overboard. We estimate each manned fixed facility would have 4 ring life bouys onboard with a cost of \$10 per bouyant line. We estimate the cost is \$40 per facility.

**First Aid Kit and Manual.** Proposed § 143.855 would require the owner or operator of a manned fixed facility to have a first aid kit, size-appropriate for the number of personnel onboard, to provide initial health care assistance to injured OCS personnel. With each kit, there must be either a copy of DHHS Publication No.(PHS) 84-2024, *The Ship 's Medicine Chest and Medical Aid at Sea* or the *American Red Cross First Aid and Safety Manual*. We estimate the cost is \$65.00 per facility.

**Immersion suits.** Proposed § 143.870 would require the owner or operator of a manned fixed facility to provide each person onboard with protection against hypothermia and shock if exposed to cold water. This requirement would affect facilities located North of 32 degrees North Latitude. This requirement would not affect facilities located in the Gulf of Mexico, but would affect 23 Pacific Coast Facilities. We estimate the cost is \$300 per immersion suit.

#### ***Subpart J--Lifesaving Equipment on Unmanned Fixed Facilities***

**Immersion suits.** Proposed § 143.925 would require the owner or operator of an unmanned fixed facility to provide each person, when onboard, protection against hypothermia and shock if exposed to cold water. This requirement would affect facilities located North of 32 degrees North Latitude. We estimate the cost is \$300 per immersion suit. The Coast Guard and MMS acknowledge that there are no unmanned fixed and unmanned floating facilities located in this region, therefore, the cost is \$0 (no cost).

#### ***Subpart K--Fire-Fighting and Fire-Protection Equipment for Fixed Facilities***

**Fireman's outfits.** Proposed § 143.1035 would require the owner or operator of manned fixed facilities to provide fire protection equipment for OCS personnel responding to fire. Specifically, two (2) fireman's outfit for each manned fixed facilities operating with nine (9) or more OCS personnel onboard. We estimate the cost is \$3,900 per outfit.

**Fire axes.** Proposed § 143.1040 would require the owner or operator of a manned fixed facility to have at least two (2) fire axes. These fire axes would provide the means to access a blocked manned space during an emergency and aid trapped OCS personnel. We estimate the cost of a fire axe is \$30 so the initial cost for this item is \$60.00 per facility.

**Fixed fire-extinguishing system.** Proposed § 143.1045 would require the owner or operator of a manned fixed facility to have a fixed fire-extinguishing system in certain spaces to ensure fire protection in areas at greater risk for fire hazard. These spaces include, but are not limited to, paint lockers, enclosed ventilation systems, galley range and deep fat fryers. We estimate the cost is \$9,700 per system.

**Fire detection and alarm systems.** Proposed § 143.1050 would require the owner or operator of a manned fixed facility to have an automatic fire detection and alarm system in all accommodation spaces and service spaces. They would also be required to provide smoke detectors for all accommodation spaces that serve as a sleeping space. This should provide adequate protection to OCS personnel from the risk of a potential fire due to flammable liquids or gases handled or processed on a fixed facility. We estimate the cost is \$20,000 per facility.

**Fire main systems.** Proposed § 143.1055 would require the owner or operator of a manned fixed facility to have a fire main system. The fire main system would ensure adequate water supply to the accommodation space area to fight a potential fire and protect OCS personnel working there. Current facilities would have a 2-year period to upgrade and meet this requirement. We estimate the cost is \$50,000 per facility.

**Helicopter landing decks.** Proposed § 143.1060 would require the owner or operator of a manned fixed facility to have a fire-protection system for all helicopter-landing decks. This system must have a fire pump, hydrant, and hose, located near each stairway. In addition, semi-portable fire extinguishers must be located at each access route. We estimate the cost is \$10,000 per facility for the system, and \$780 per CO2 fire extinguisher.

**Helicopter fueling facilities.** Proposed § 143.1061 would require the owner or operator of a manned fixed facility to have a fire-protection system capable of delivering a fire-fighting agent to the helicopter fuel containment area. In addition, portable fire extinguishers would be required at each helicopter fuel facility, unless a fixed-foam system was installed. Based on interviews with offshore helicopter services, we assume that all helicopter fueling facilities currently meet this requirement. Therefore, we estimate the cost is \$0 (no cost).

#### ***Subpart L--Systems Fire Protection for Fixed Facilities***

**System fire protection.** Proposed §§ 143.1100 through 143.1125 and 143.1135 would require the owner or operator of a manned fixed facility to meet structural fire requirements for new build accommodations spaces, accommodations modules, temporary accommodations modules, and accommodation modules that are part of a platform/workover package. Current regulations have no structural fire protection. The *Piper Alpha* incident in the North Sea highlighted the importance of structural fire protection in the event of catastrophic fire. We estimate the cost is \$30,000 per facility, based on the cost differential between current structures and fire protection and the new proposed requirements.

**Ventilation systems.** Proposed § 143.1130 would require the owner or operator of a new build, manned fixed facility to have a means to shut-down a ventilation system to prevent OCS personnel exposure to harmful smoke and gases, and to provide an alarm system to detect flammable gases, smoke, or hydrogen sulfide in manned locations. We estimate the cost is \$20,000 per facility.

#### ***Subpart N--Design and Equipment for Fixed Facilities***

**Medical treatment room.** Proposed § 143.1321 would require the owner or operator of a new build, manned fixed facility with accommodation space for 12 or more persons to have a medical treatment room. This will provide a place where personnel can receive basic first-aid treatment

or be isolated while awaiting evacuation to a land-based medical facility. We estimate the cost is \$5,500 per facility.

**Potable water system.** Proposed § 143.1330 would require the owner or operator of a new build, manned fixed facility to have a potable water system meeting the requirements of 21 CFR part 1250 and 40 CFR part 141. This would help prevent the introduction, transmission, or spread of communicable disease. Since this requirement enforces a current EPA regulation, a cost/benefits analysis would not be reproduced here.

**Wash water system.** Proposed § 143.133 1 would require the owner or operator of a new build, manned fixed facility to have a wash water system meeting the requirements of 21 CFR part 1250 and 40 CFR part 141. This would allow the use of water that is unfit for drinking in slop sinks, lavatories, laundry facilities, or other uses not requiring potable water. Since this requirement enforces a current FDA regulation, a cost/benefits analysis would not be reproduced here.

**Emergency lighting and power sources.** Proposed § 143.1336 would require the owner or operator of a new build, manned fixed facility to have an independent source for emergency lighting and power. This may consist of batteries, a generator, or a combination of both, capable of providing necessary power for a minimum of 8 hours. This should ensure light and power during an emergency situation. We estimate the cost is \$62,000 per facility.

#### ***Subpart O--Certification of Fixed Facilities***

**Design certification.** Proposed § 143.1410 would require the owner or operator of a new build, manned fixed facility to have a registered professional engineer or registered architect review the facility design plans and specifications to ensure they are in compliance with Coast Guard regulations. After the review, the registered professional engineer or registered architect would submit a signed letter of certification to the Coast Guard. This proposed item would allow the owner or operator the flexibility to use either in-house or third-party engineers to review and certify calculations and drawings. The result should reduce both the time required and the overall cost of the plan review. We estimate the cost is \$10,000 per facility.

**Table 4. Itemized Industry Costs for 33 CFR subchapter N, part 143**

Subject	Requirement details	Assumption(s)	Implementation cost First-year   New Builds		Recurring cost 2-yr phase-in   Annual	
Fire drills (§ 143.420)	Monthly drill.  cost: \$0.	Applies to OCS units (987).  See Note (1).  Facilities perform multiple drills, in sequence, and on a rotating schedule to ensure all personnel are drilled within the required interval.	None	None	None	None
Lifesaving and survival instruction and training (§ 143.510)	Includes initial <b>offsite</b> instruction in lifesaving procedures, survival training, use of lifesaving equipment, and duties assigned under the station bill.  Cost: \$5,880 per facility.	Applies to all manned fixed facilities (789).  See Note (1).  Approximately 50 percent currently meet this requirement. (789 x .50)  Refresher training provided by <b>onsite</b> facility personnel at minimal cost.	\$2,322,600 (395 x \$5,880)  395 manned fixed facilities (789 x .5)	None	None	None
Maintenance of survival craft falls (§ 143.620)	Falls used in a launching device for survival craft or rescue boats must be renewed when necessary due to deterioration or at intervals of not more than 5 years.  Cost: \$2,500 per set of falls; \$2,500 per set of falls every 5 years.	Applies to manned fixed facilities (789).  See Note (1).  Approximately 50 percent currently meet this requirement. (789 x .50)  One (1) set of falls per facility.  Recurring cost annualized over 5 years.	\$987,500 (395 x \$2,500)  395 manned fixed facilities (789 x .5)	None	None	\$197,500 (987,500 ÷ years)
Maintenance of lifeboats and rescue boat launching appliances and release gears (§§ 143.625 and 143.630)	Maintain and test launching appliances and release gears to ensure proper operation for emergency use at least every 5 years.  Cost: \$500 per facility; recurring cost \$500 per facility every 5 years.	Applies to manned fixed facilities (789).  See Note (1).  Approximately 50 percent currently meet this requirement. (789 x .50)  Recurring cost annualized over 5 years.	\$197,500 (395 x \$500)  395 manned fixed facilities (789 x .5)	None	None	\$39,500 (\$197,500 ÷ years)

**Table 4. Itemized Industry Costs for 33 CFR subchapter N, part 143 (continued)**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Equipment inspection (§§ 143.720 through 143.730)	Weekly, monthly, semi-annual, and annual inspection of lifesaving equipment, fire-fighting equipment, and emergency lighting and power systems. Cost: \$900 per facility.	Applies to manned fixed facilities (789). See Note (I). Approximately 50 percent currently meet this requirement. (789 x .50)	\$355,500 (395 x 900) 395 manned fixed facilities (789 x .5)	None	None	\$355,500 (395 x 900) 395 manned fixed facilities (789 x .5)
Annual maintenance of survival craft (§ 143.730(a))	Strip clean and thoroughly inspect and refurbish if necessary once per year. Cost: \$500 per facility	Applies to manned fixed facilities (789). See Note (I). Approximately 50 percent currently meet this requirement. (789 x .50)	\$197,500 (395 x \$500) 395 manned fixed facilities (789 x .5)	None	None.	\$197,500 (395 x \$500) 395 manned fixed facilities (789 x .5)
Installation weight testing for survival craft (§ 143.735)	Ensure the delivery system is operational and ready for emergency use. cost: \$0	Applies to manned fixed facilities (789). Cost captured in the initial cost of purchasing and installing a survival craft. Survival craft are rarely relocated.	None	None	None	None
Periodic weight testing for survival craft (§ 143.740)	Weight testing required when a survival craft fall is replaced or at least every 5 years. Cost: \$500 per facility	Applies to manned fixed facilities (789). See Note (I). Approximately 50 percent of facilities currently meet this requirement. (789 x .50) Recurring cost annualized over 5 years.	\$197,500 (395 x \$500) 395 manned fixed facilities (789 x .5)	None	None	\$39,500 ((\$197,500 : 5 years)



**Table 4. Itemized Industry Costs for 33 CFR subchapter N, part 143 (continued)**

Subject	Requirement details	Assumption(s)	Implementation cost First-year   New Builds		Recurring cost 2-yr phase-in   Annual	
Survival craft and rescue boats (\$ 143.826)	Type and minimum number of survival craft and rescue boats based on facility location and total personnel on board.  Cost: \$100,000 per lifeboat, \$10,000 per installation; \$26,000 per life raft, \$5,000 per installation.	Applies to manned fixed facilities (789).  Current and new lifeboats would meet the requirements for rescue boats.  WITHIN SAFE HAVEN  Approximately 40 percent of facilities are located within safe haven. (789 x .40)  Approximately 33 percent of facilities need lifeboats. (316 x .33)  BEYOND SAFE HAVEN  Approximately 60 percent of facilities are located beyond safe haven (789 x .60)  Approximately 33 percent of facilities need lifeboats (473 x .33) and 6.5 percent need life rafts (473 x .065)	\$11,440,000  (1 04 lifeboats and installation x 110,000)	None	None	None
Lifejacket whistle (\$ 143.845)	Ball-type or multi-tone, corrosive resistant whistle attached to lifejackets.  Cost: \$ .50 per whistle.	Applies to manned fixed facilities (789).  20 lifejacket whistles per facility.	\$7,890  (789 x 20 whistles x \$ .50)	None	None	None
Buoyant line for ring life buoy (\$ 143.850)	100 feet of 1, 1 24 pound test buoyant line attached to each ring life buoy.  Cost: \$10 per buoy	Applies to manned fixed facilities (789).  Four (4) ring life buoys per facility.	\$31,560  (789 x 4 buoys x \$10)	None	None	None
First aid kit and manual (\$ 143.855)	DHHS Publication No.(PHS) 84-2024, The Ship's Medicine Chest and Medical Aid at Sea or American Red Cross First Aid Manual that is maintained with a size-appropriate first aid kit.  Cost. \$65 per facility.	Applies to manned fixed facilities (789).	\$51,285  (789 x \$65)	None	None	None

**Table 4. Itemized Industry Costs for 33 CFR subchapter N, part 143 (continued)**

Subject	Requirement details	Assumption(s)	Implementation cost First-year   New Builds		Recurring cost 2-yr phase-in   Annual	
Immersion suits on manned fixed facilities (§ 143.870)	Immersion suit for each person onboard. Cost: \$300 per suit.	Applies to manned fixed facilities located North of 32 degrees North latitude (23).	\$96,600 (23 x 14 persons x \$300)	None	None	None
Immersion suits on unmanned fixed facilities (§ 143.925)	Immersion suit for each person onboard. Cost: \$300 per suit.	Applies to unmanned fixed facilities located North of 32 degrees North latitude (zero) <sup>4</sup>	None	None	None	None
Fireman's outfits (§ 143.1035)	Two fireman's outfits for personnel to wear when responding to fire. Cost: \$3,900 per outfit.	All manned fixed facilities with nine or more personnel onboard (300).	\$2,340,000 (300 facilities x 2 x \$3,900)	None	None	None
Fire axes (§ 143.1040)	Two fire axes to provide means to access blocked spaces when responding to fire. Cost: \$30 per axe	Applies to manned fixed facilities (789). Approximately 20 percent of manned fixed facilities need fire axes. (789 x .20) 2-year phase-in period.	\$4,740 (\$9,480 ÷ 2 years) (158 x 2 axes x \$30)	None	\$4,740 (\$9,480 ÷ 2 years) (158 x 2 axes x \$30)	None
Fixed fire-extinguishing system (§ 143.1045)	Fixed fire-extinguishing system for spaces including paint lockers, enclosed ventilation systems, galley range and deep fat fryers. Cost: \$9,700 per system.	Applies to manned fixed facilities (789). Approximately 50 percent of facilities currently meet this requirement (789 x .50) 2-year phase-in period.	\$1,915,750 (\$3,831,500 ÷ 2 years) (395 x \$9,700)	None	\$1,915,750 (\$3,831,500 ÷ 2 years) (395 x \$9,700)	None
Fire detection and alarm systems (§ 143.1050)	Automatic fire detection and alarm system for all accommodation, sleeping, and service spaces. Cost: \$20,000 per facility.	Applies to manned fixed facilities (789). Approximately 15 percent of manned fixed facilities need fire detection and alarm systems. (789 x .15) 2-year phase-in period	\$1,180,000 (\$2,360,000 ÷ 2 years) (118 x \$20,000)	None	\$1,180,000 (\$2,360,000 ÷ 2 years) (118 x \$20,000)	None

<sup>4</sup> The Coast Guard and MMS acknowledge that there are no unmanned fixed and unmanned floating facilities in this region, therefore the count is zero.

**Table 4. Itemized Industry Costs for 33 CFR subchapter N, part 143 (continued)**

Subject	Requirement details	Assumption(s) <sup>a</sup>	Implementation cost First-year   New Builds		Recurring cost 2-yr phase-in   Annual	
Fire main systems (§ 143.1055)	Requires a fire main to provide necessary water supply to fight fire, but provides the option to piggy-back off the <b>MMS</b> fire main.  Cost: <b>\$50,000</b> per facility.	Applies to manned fixed facilities (70).  Approximately 91 percent of fixed facilities are currently in compliance.  <b>2-year</b> phase-in period.	<b>\$1,750,000</b>  ( <b>\$3,500,000</b> ÷ 2 years)  (70 x \$50,000)	None	<b>\$1,750,000</b>  ( <b>\$3,500,000</b> ÷ 2 years)  (70 x \$50,000)	<i>None</i>
Fire-protection system for helicopter landing decks (§ 143.1060)	Requires a fire pump, hydrant, and hose located near each stairway and semi-portable fire extinguisher at each access route.  Cost: <b>\$10,000</b> per system and <b>\$780</b> per CO2 fire extinguisher.	Applies to manned fixed facilities (789).  Approximately 20 percent of manned fixed facilities need fire protection for helicopter landing decks. (789 x 20)  Each facility has a helicopter landing deck requiring one (I) system and one (I) CO2 fire extinguisher.  <b>2-year</b> phase-in period.	<b>\$851,620</b>  ( <b>\$1,703,240</b> ÷ 2 years)  (158 x \$10,000) + (158 x \$780)	None	<b>\$851,620</b>  ( <b>\$1,703,240</b> ÷ 2 years)  (158 x \$10,000) + (158 x \$780)	None
Fire protection for helicopter fueling facilities (§ 143.1061)	Fire-protection system capable of delivering a fire-fighting agent to the helicopter fuel containment area. If the system is not a <b>fixed-foam</b> system, additional fire extinguishers are required.  cost: <b>\$0</b>	Applies to manned fixed facilities (789).  All helicopter fueling facilities currently meet this requirement.	None	None	None	None
System fire protection (§ 143.1100 through 143.1125 and 143.1135)	Requirements for new build accommodations spaces, accommodation modules, temporary accommodation modules, and accommodation modules that are part of a drilling <b>platform/workover</b> rig package on manned fixed facilities.  Cost: <b>\$30,000</b> per facility.	Applies to new build OCS facilities (30).	None	<b>\$900,000</b>  (30 x \$30,000)	None	None

**Table 4. Itemized Industry Costs for 33 CFR subchapter N, part 143 (continued)**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Ventilation systems (§ 143.1130)	Ventilation system equipped with a shut-down mechanism and an alarm when flammable gas, smoke, or hydrogen sulfide are detected.  Cost: \$20,000 per system.	Applies to new build OCS facilities (30).  One (1) system per facility.	None	\$600,000 (30 x \$20,000)	None	None
Medical treatment room (§ 143.1321)	Requires a space where an injured individual can be isolated while awaiting evacuation or where they can receive basic first aid treatment.  Cost: \$5,500 per facility.	Applies to new build OCS facilities (30).	None	\$165,000 (30 x \$5,500)	None	None
Potable water system (§ 143.1330)	Requires potable water systems to meet the requirements under 21 CFR part 1250 and EPA's Drinking Water Regulations in 40 CFR part 141.	Applies to new build OCS facilities (30).  All facilities currently comply with the EPA requirement, so we do not cost this item.	None	None	None	None
Wash water system (§ 143.1331)	Requires wash water systems to meet the requirements under 21 CFR part 1250 and allows the use of water that is unfit for drinking where potable water is not required (ex. Slop sinks, lavatories, laundry facilities).	Applies to new build OCS facilities (30).  All facilities currently comply with the FDA requirement, so we do not cost this item.	None	None	None	None
Emergency lighting and power systems (§ 143.1336)	Requires a general or separate emergency lighting and power source capable of providing independent emergency power source for at least 8 hours. (consisting of batteries, a generator, or a combination of both.)  Cost: \$62,000 per facility.	Applies to new build OCS facilities (30).	None	\$1,860,000 (30 x \$62,000)	None	None

Table 4. Itemized Industry Costs for 33 CFR subchapter N, part 143 (continued)

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Design certification (§ 143.1410)	Requires a U.S. registered professional engineer to review facility design plans and specifications to ensure they are in accordance with Coast Guard regulations. After the review, a registered professional engineer would submit a signed letter of certification to the Coast Guard.  Cost: \$10,000 per facility.	Applies to new build OCS facilities (30).	None	\$300,000 (30 x \$10,000)	None	None

## ***NEW PART 144 – OUTER CONTINENTAL SHELF ACTIVITIES: FLOATING FACILITIES***

### ***Subpart E--Lifesaving Equipment for Unmanned Facilities***

**Immersion suits.** Proposed § 144.420 would require the owner or operator of an unmanned fixed facility to provide personnel, when onboard, with protection against hypothermia and shock if exposed to cold water. This requirement would affect facilities located North of 32 degrees North Latitude. We estimate the cost is \$300 per immersion suit. The Coast Guard and MMS acknowledge that there are no unmanned fixed and unmanned floating facilities located in this region. Therefore, we estimate the cost is \$0 (no cost).

### ***Subpart I--Plan Approval***

**In-Service inspection plan.** Proposed § 144.830 provides the owner or operator of a floating facility an inspection option, an in-service inspection plan in lieu of the 2-year drydocking requirement. The in-service inspection plan would permit a floating facility to remain on station during its field depletion lifetime. We estimate the cost on in-service inspection plans is \$70,000 per facility. An owner or operator who opts for this alternative will not incur any additional cost, but will benefit from a cost-savings. Therefore, we estimate the cost is a \$0 (no cost).

**Design basis for U.S. and undocumented floating facilities of novel and unconventional design.** Proposed § 144.835 would require the owner or operator of a floating facility to develop a Design Basis which should describe the design methodology, method of analysis, and description of the facility. The design basis is necessary as new technology and novel or unconventional designs emerge to facilitate deep-water exploration. The design basis should improve safety. The cost to produce a design basis could be amortized over the number of facilities built using the design basis. This could provide significant cost savings to the owner or operator. We estimate the cost is \$40,000 per design basis.

### ***Subpart J--Inspection and Certification***

**Foreign floating facility Letter of Compliance (LOC).** Proposed § 144.1030 would require the owner or operator of a foreign floating facility to have an LOC to operate in a defined area of the OCS. This would ensure compliance with Coast Guard design and equipment standards and an equivalent level of safety for all OCS personnel. We assume the only cost for this item is the cost for Coast Guard inspection to obtain the LOC. The Coast Guard does not currently have a user fee set for providing an inspection service to a foreign floating facility. We estimate that the cost would be \$1,830 per facility, based on the current fee for a foreign MODU.

**Table 5. Itemized Industry Costs for 33 CFR subchapter N, part 144**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
immersion suits on unmanned floating facilities (§ 144.420)	Immersion suits for each person when <b>onboard</b> . Cost: <b>\$300</b> per suit.	Applies to unmanned floating facilities located North of 32 degrees North latitude (zero). <sup>5</sup>	None	None	None	None
In-service Inspection plan for floating facilities (§ 144.830)	Permits a floating facility to remain on station during its field depletion lifetime by allowing owners/operators the option of in-service inspection in lieu of the 2-year drydocking. Cost: <b>\$70,000</b> per facility.	Applies to floating facilities (7). All floating facilities would opt for in-service inspection rather than shutdown operations to <b>drydock</b> (and thereby benefit from a cost savings).	None	None	None	None
Design basis for U.S. and undocumented floating facilities of novel and unconventional design (§ 144.835)	Requires any planned floating facility that uses new technology, novel design, or unconventional design to develop a Design Basis for Coast Guard approval. This design basis would describe the design methodology, method of analysis, and description of the facility. Cost: <b>\$40,000</b> per design basis.	The Coast Guard estimates that four (4) facilities would present design plans per year.  If an approved design basis is used when building one or more subsequent floating facilities, a company may amortize the initial cost of producing the <b>design</b> basis by the number of facilities built.	<b>\$160,000</b> (4 x \$40,000)	None	<b>\$160,000</b> (4 x \$40,000)	None
Letter of compliance for foreign floating facilities (§ 144.1030)	Requires a LOC for foreign floating facilities that elect to operate on the OCS (to ensure they meet equivalent design and equipment requirements as U.S. units similarly engaged).  Cost: <b>\$1,830</b> per facility	Applies to foreign floating facilities (1). Recurring cost annualized over 2 years.  The Coast Guard does not have a user fee for this service. The cost is estimated based on the current fee for <b>foreign</b> MODUS.	<b>\$915</b> ( <b>\$1,830</b> ÷ 2 years) (1 x \$1,830)	None	<b>\$915</b> ( <b>\$1,830</b> ÷ 2 years) (1 x \$1,830)	None

<sup>5</sup> The Coast Guard and MMS acknowledge that there are no unmanned fixed and unmanned floating facilities in this region, therefore the count is zero.

***PART 145 – OUTER CONTINENTAL SHELF ACTIVITIES: MOBILE OFFSHORE DRILLING UNITS (MODUs) AND MOBILE INLAND DRILLING UNITS (MIDUs)***

***Subpart C--Lifesaving Equipment***

**Immersion suits on U.S. MODUs.** Proposed §145.210 would require the owner or operator of a MODU to provide personnel with protection against hypothermia and shock if exposed to cold water. This requirement would affect facilities located North of 32 degrees North Latitude. This requirement would not affect facilities located in the Gulf of Mexico. We estimate the cost is \$300 per immersion suit. Present MODU regulations state that immersion suits are required North of 32 degrees North latitude in the Atlantic and North of 35 degrees North latitude in the Pacific. The proposed requirement would align both the Atlantic and Pacific oceans to 32 degrees North latitude. The Coast Guard and MMS acknowledge that no MODUs are currently operating in this region. Therefore, we estimate the cost is \$0 (no cost).

***Subpart F--Mobile Inland Drilling Units***

**MIDU Emergency Evacuation Plan.** Proposed §145.520 would require the owner or operator of a MIDU, who elects to engage in OCS activities, to have an emergency evacuation plan. We estimate the cost is \$960 per MIDU. We expect that four (4) MIDUs per year would elect to operate on the OCS.

**MIDU LOC.** Proposed §145.540 would require the owner or operator of a MIDU, who elects to engage in OCS activities, to have an LOC. This would require a Coast Guard inspection to ensure compliance with fixed facility requirements for lifesaving, fire-fighting, operations, and equipment. Traditionally, MIDUs operate in state waters, which are both near land and relatively shallow. We assume the only cost for this item is the cost for Coast Guard inspection to obtain the LOC. At this time, the user fee is not set for inspection of a MIDU engaged in OCS activity. We estimate the cost to industry for this service would be \$5,368 per MIDU, based on the user fee for a drill ship MODU. We expect that four (4) MIDUs per year would elect to operate on the OCS.



**Table 6. Itemized Industry Costs for 33 CFR subchapter N, part 145**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Immersion suits on U.S. MODUs (\$ 145.210)	Immersion suits for each person when onboard. Cost: \$300 per suit.	Applies to MODUs located North of 32 degrees North latitude (zero).	None	None	None	None
Emergency evacuation plan for U.S. MIDUs (\$ 145.520)	Requires an EEP for U.S. MIDUs that elect to leave state waters and operate on the OCS. Cost: \$960 per facility annually.	Applies to MIDUs engaged in OCS activity (4).	\$3,840 (4 x \$960)	None	\$3,840 (4 x \$960)	None
Letter of compliance for U.S. MIDUs (\$ 145.540)	Requires a LOC for U.S. MIDUs that elect to leave state waters and operate on the OCS. Cost: \$5,368 per MIDU every 2 years.	Applies to MIDUs engaged in OCS activity (4). The Coast Guard does not have a user fee for this service. The cost is estimated based on 80 percent of the current fee for drill ship MODUs. (\$6,710 x .80) Recurring cost annualized over 2 years.	\$10,736 (\$21,472 ÷ 2 years) (4 x \$5,368)	None	\$10,736 (\$21,472 ÷ 2 years) (4 x \$5,368)	None

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<sup>6</sup> The Coast Guard and MMS acknowledge that MODUs are not located in this region, therefore the count is zero.

## ***NEW PART 146 -- OUTER CONTINENTAL SHELF ACTIVITIES: VESSELS***

### ***Subpart C--Lifesaving***

**Immersion suits on foreign vessels.** Proposed § 146.210 would require the owner or operator of a foreign vessel to provide personnel with protection against hypothermia and shock if exposed to cold water. This requirement would affect facilities located North of 32 degrees North latitude. This requirement would not affect vessels located in the Gulf of Mexico, but would affect vessels engaged in OCS activities along the Atlantic or Pacific Coasts. We estimate the cost is \$300 per immersion suit. Currently, there are no foreign vessels engaged in OCS activity operating in this area. Therefore, we estimate the cost is \$0 (no cost).

### ***Subpart E--Design, Equipment, and Inspection***

**Foreign vessel LOC.** Proposed § 146.420 would require the owner or operator of a foreign vessel engaged in OCS activities to have an LOC. This would require a foreign vessel to meet the same or equivalent design and equipment requirements as a domestic vessel, and ensure an equal level of safety for all OCS personnel. (Foreign OSVs are excluded, since they are not permitted to work on the OCS under the Jones Act.) We assume the only cost for this item is the cost for Coast Guard inspection to obtain the LOC. At this time, the user fee is not set for inspection of a foreign vessel engaged in OCS activity. We estimate the cost to industry for this service would be \$2,550 per foreign vessel, based on the user fee for inspection of other foreign vessels.

**Table 7. Itemized Industry Costs for 33 CFR subchapter N, part 146**

Subject	Requirement details	Assumption(s)	Implementation cost		Recurring cost	
			First-year	New Builds	2-yr phase-in	Annual
Immersion suits on foreign vessels (\$ 146.210)	Immersion suit for each person when onboard. Cost: \$300 per suit.	Applies to foreign vessels engaged in OCS activity located North of 32 degrees North latitude (zero). <sup>7</sup>	None	None	None	None
Letter of compliance for foreign vessels (\$ 146.420)	Requires a LOC for all foreign vessels that elect to operate on the OCS (to ensure they meet equivalent design and equipment requirements as a U.S. unit similarly engaged). Cost: \$2,550 per vessel.	Applies to foreign vessels engaged in OCS activity (70).  Foreign OSVs are exempt, as the Jones Act does not permitted them to work on the OCS.  The Coast Guard does not have a user fee for this service. The cost is estimated based on the current fee for foreign vessel greater than 200 feet, not engaged on the OCS.  Recurring cost annualized over 2 years.	\$89,250  (\$178,500 ÷ 2 years)  (70 vessels x \$2,550)	None	\$89,250  (\$178,500 ÷ 2 years)  (70 vessels x \$2,550)	None

<sup>7</sup> The Coast Guard estimates that foreign vessels engaged in OCS activity are not located in this region, therefore the count is zero.

## Government Costs

Federal government costs would include Coast Guard personnel time and resources to review and approve:

- In-service inspection plans for tension leg platforms (TLP) and spar buoys (SPARS):
- Design basis documents for floating facilities: and
- Inspections for letter of compliance issuance for MIDUs and foreign vessels.

The following table is a breakdown of the total cost to government.

**Table 8. Costs of Coast Guard Review**

Item	# of reviews per year (A)	CG Personnel (B)	CG Hourly Rate <sup>8</sup> (C)	Hours to Review (D)	Total Cost (AxBxCxD)
In-service inspection	3	2	\$32	160	\$30,720
Design basis	4	1	\$32	307	\$39,296
Letter of compliance for foreign vessels	70	2	\$32	12	\$53,760
Letter of compliance for MIDUs	4	1	\$32	4	\$512
<b>Total Government Cost</b>					<b>\$124,288</b>

## Total Industry Costs

Compliance costs of the proposed rule to the offshore industry are shown in Appendix C, Table 1. The accumulated present value costs of this rule are **\$81,937,888**. See Appendix C, Table 2.

Total first-year costs to industry are \$33.7 million. Two-year phase-in costs to industry are \$21.6 million and recurring annual costs are \$5.2 million. See Appendix C, Table 2.

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<sup>8</sup> Labor costs are from the USCG "Standard Rates" (COMDTINST 7310.1E).

## **Benefit Evaluation**

According to the MMS FY95 report to Congress, a noticeable increase of accidents and injuries have occurred to personnel engaged in OCS activities due to the rapid increase of oil exploration and production over the last 20 years. The proposed rule would provide benefits through implementing workplace safety and health, lifesaving and fire-fighting equipment, and structural fire protection requirements. Also, the proposed rule would require the owner or operator of a foreign vessel or foreign floating facility engaged in OCS activities to comply with requirements similar to those imposed on U.S. OCS units.

Most accidents on the OCS occur during drilling or production. Trends show that the two main causes of incidents are equipment failure and human error. The proposed rule would provide benefits by reducing the number of accidents or decreasing the severity of injury to personnel. We did not include the valuation of property damage from blowouts, fires, and explosions as a potential benefit due to insufficient data to support accurate assumptions. Some of the proposed measures that will reduce the likelihood of deaths and injuries include improved workplace safety and health requirements, structural fire protection, and additional lifesaving, fire-fighting, and fire-protection equipment. The following is a discussion presenting the quantifiable benefits, the qualitative benefits, and the total benefits summary.

### **Benefits Methodology**

To determine potential benefits, we examined both the Coast Guard and Mineral Management databases for accidents involving personnel on OCS units and identified the trends. This data is summarized in Table 9.

**Table 9. Breakdown of OCS Fatalities and Injuries**

<b>Fatalities (MMS database) <sup>9</sup></b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
Human Error or Work Place Safety Related (39)	4	2	6	6	7	5	9
Fire-Related (1)	0	0	0	0	1	0	0
Water-Related (20)	1	1	4	2	2	5	5
Total Number of Fatalities (61)	5	3	10	8	10	11	14

<b>Injuries (MSMS database) <sup>10</sup></b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998 <sup>11</sup></b>
Total Number of Injuries (455)	128	75	57	63	53	48	31

From this data, we extracted cases meeting the following criteria--

- 1) Fatalities that had occurred “on or around” an OCS unit;
- 2) Critical or severe injury that occurred “on or around” an OCS unit; and
- 3) Injuries “on or around” an OCS units that involved fire, water, or human-error related incidents.

A query of the Coast Guard’s Marine Safety Information System (MSIS) yielded 94 incidents between 1992-1998 that met the criteria. A MMS query yielded 61 fatality cases that met the criteria. The following adjustments have been made:

- 1) We used MMS fatality cases as our primary data source for fatalities. We cross-referenced all of the MSMS fatality cases with the MMS cases to avoid double-counting.
- 2) We used MSIS as our data source for injuries. MSIS data had more information and allowed us to make a better criteria match.

From the combined data sources, we identified a total of 47 accidents likely to benefit from the proposed requirements. (Appendix D includes tables that present MSIS and MMS cases used for this analysis.)

We then assigned one of the following effectiveness measures to each incident:

- 1) 85 percent for incidents with a high possibility of prevention;

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<sup>9</sup> Fatality data retrieved from Minerals Management Service’s OCS Report MMS 98-003 (does not include fatalities resulting from natural causes).

<sup>10</sup> Injury data retrieved from MSMS database.

<sup>11</sup> 1998 data is considered partial due to the lag period in receiving complete yearly data.

- 2) 50 percent for incidents with a medium possibility of prevention: or
- 3) 25 percent for incidents with a low possibility of prevention.

The effectiveness measures assigned to individual incidents were based on-- (a) the actual details of the incident, (b) the positive effects of measures or regulations currently in place to avert occurrences. i.e. SEMP, and, (c) the professional estimates used to determine the degree of applicability. See Appendix E for sample narratives.

The benefits estimate for each incident is determined by multiplying the effectiveness measure and the dollar value for society's willingness to pay (WTP) to avert a fatality. The benefits of the proposed rule would be measured based on an estimated dollar value for society's WTP to avert a fatality. According to the Department of Transportation, the value is \$2.7 million per fatality averted. Injuries averted are derived as a fraction of the value of an averted fatality.<sup>12</sup> Because of the subjectiveness in determining whether an injury is severe or critical (e.g., multiple injuries to neck, head, or spinal), the mean of these two injury levels is calculated as \$1,282,500 and is applied as the value of an averted injury.

### **Quantifiable Benefits**

Quantifiable benefits accruing from this proposed rule include reductions in deaths and injuries due to improved workplace safety and health requirements, and additional lifesaving, fire-fighting, and fire-protection equipment. These potential benefits are determined based on the analysis of accident cases from the MSIS and MMS databases. The proposed requirements that would have potentially reduced the likelihood of accidents that occurred on the OCS and provided a quantifiable benefit are discussed here.

### ***PART 142: WORKPLACE SAFETY & HEALTH BENEFIT ESTIMATE***

Based on the review of accident narratives over the period of analysis, 24 deaths and 5 injuries might have been prevented or diminished in severity by the proposed workplace safety and health requirements. Proposed requirements that would impact incidents similar to our criteria base are: increase training, improve work practices, upgrade fall arrest systems, and require guardrails, fencing, or other means necessary to avert a fall.

The following table summarizes the effectiveness measures applied to accidents that occurred during the period of analysis. Annual benefits from avoided deaths and injuries for this component are \$7.1 million.

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<sup>12</sup> Department of Transportation's memorandum, dated January 8, 1993, "Treatment of Value of Life and Injuries in Preparing Economic Evaluations" provides percentages of society's WTP for severe and critical injuries.

**Table 10. Workplace Safety & Health Benefit Estimate<sup>13</sup>**

<b>Type of Accident (A)</b>		<b>WTP Value x effectiveness measure (B)</b>	<b>Annual Benefit Estimate: (AxB)/7 years</b>
Fatalities			
High	<b>15</b>	\$2.7 M WTP x .85 = \$2,295,000	\$4,917.857
Medium	<b>6</b>	\$2.7 M WTP x .5 = \$1,350,000	\$1,157,143
Low	<b>3</b>	\$2.7 M WTP x .25 = \$ 675,000	\$289,286
Injuries			
High	<b>5</b>	\$1,282,500 WTP x .85 = \$1,090,125	\$778.661
<b>Total Annual Benefits Estimate</b>			<b>\$7,142,947</b>

### ***PART 143: FIXED FACILITIES BENEFIT ESTIMATE***

Below are the estimated benefits for lifesaving equipment, and fire-fighting and fire-protection equipment. These two sections are reviewed separately because they represent a significant share of the proposed requirements. We found zero (0) quantifiable benefit for the remaining proposed requirements under the fixed facilities component, i.e., medical treatment room and emergency lighting and power source. However, they are discussed later as qualitative benefits.

#### ***Lifesaving Equipment Benefit Estimate***

Based on the review of accident narratives, 9 deaths and 5 injuries might have been prevented or diminished in severity by the proposed lifesaving equipment requirements. The following table summarizes the effectiveness measures applied to accidents that occurred during the period of analysis. Annual benefits from avoided deaths and injuries for this component are \$2.3 million.

<sup>13</sup> The benefit estimates from avoided fatalities and injuries are annualized over 7 years. This is determined by the number of years in the data analysis period.



**Table 11. Lifesaving Equipment Benefit Estimate**

Type of Accident (A)		WTP Value x effectiveness measure (B)	Annual Benefit Estimate: (AxB)/7 years
Fatalities			
High	2	\$2.7 M WTP x .85 = \$2,295,000	\$655,714
Medium	4	\$2.7 M WTP x .5 = \$1,350,000	\$771,429
Low	3	\$2.7 M WTP x .25 = \$675,000	\$289,286
Injuries			
High	2	\$1,282,500 WTP x .85 = \$1,090,125	\$311,464
Medium	3	\$1,282,500 WTP x .5 = \$641,250	\$274,821
<b>Total Annual Benefit Estimate</b>			<b>\$2,302,714</b>

Currently, 67 percent of industry voluntarily complies with survival craft and rescue boat requirements. Survival crafts and rescue boats are needed to provide a means for personnel to abandon a facility during a blowout, explosion, or fire. Blowouts, which are an uncontrollable flow of hydrocarbon from a wellhead, have occurred more frequently in recent years – as shown in Table 12. On average, the number of fires in 1997 and 1998 totaled 109. Although most of these incidents were considered minor, the occurrences posed a risk to human safety.

Data reports provided by Survival Systems International include emergency offshore incidents requiring evacuation of crewmembers, using their survival craft. On 5 different incidents during the period from 1994 to 1997, more than 156 persons were evacuated by rescue boats. The incidents were primarily a result of fire and explosion. Exposure to risk and danger increases with the likelihood of emergency abandonment of facilities. The availability of rescue boats is critical to a safe and expeditious evacuation.

**Table 12. Accidents on OCS facilities between 1995 and 1998.<sup>14</sup>**

	1995	1996	1997	1998	Totals
Blowouts	1	4	5	7	17
Collisions	6	5	10	6	27
Explosion	0	8	10	4	22
Fires	41	83	125	92	341
Totals	48	100	150	109	407

<sup>14</sup> Accident data from Minerals Management Service's OCS Report MMS 98-0030.

### ***Fire-Fighting and Fire-Protection Equipment Benefit Estimate***

Based on the review- of accident narratives over the period of analysis, 1 death and 3 injuries might have been prevented or diminished in severity by the proposed fire-fighting and fire-protection equipment requirements. The following table summarizes the effectiveness measures applied to accidents that occurred during the period of analysis. Annual benefits from avoided deaths and injuries for this component are \$660,053.

**Table 13. Fire-fighting and fire protection equipment benefit estimate**

Type of Accident (A)		WTP Value x effectiveness measure (B)	Annual Benefit Estimate: (AxB)/7 years
Fatalities			
Medium	1	\$2.7 M WTP x .5 = \$1,350,000	\$192,857
Injuries			
High	3	\$1,282,500 WTP x .85 = \$1,090,125	\$467,196
		<b>Total Annual Benefit Estimate</b>	<b>\$660,053</b>

The most significant fire in the last decade was the 1988 Piper Alpha incident in the North Sea. We did not quantify benefits from the Piper Alpha for this rulemaking; however, we mention it to show the presence of risk. The night of July 6, 1988, a series of events resulted in a catastrophic fire. These events include human error, operational failure, design deficiencies, and system failures. Of the 226 people onboard, 165 died. We reviewed reports on this incident and incorporated several requirements in the proposed rule to provide increased safety and reduce the risk of this type of incident happening on the U.S. OCS in the future. These proposed items include, but are not limited to, personnel training, fire and emergency drills, means of escape, fire-protection systems, fire-fighting equipment, a tire main, structural fire protection, emergency lighting and power, and design certification.

We reviewed other MMS narratives describing fire-related incidents that did not result in injuries or fatalities, but might have been prevented or diminished in severity by the proposed fire-fighting and fire-protection equipment requirements. The proposed on-site fire main system might have been effective in the following scenarios—

- On November 12, 1995, the night production operator noticed a pipeline pump engulfed in flames, which were spreading into the wellbay. The temperature safety element located above the pump burned out and activated the emergency shut down system. The general alarm was sounded to alert all personnel. The fire-fighting deluge system was activated by the emergency shut down. After about 5 minutes the fire was extinguished using the fire pump water and a No. 30 extinguisher.
- On September 20, 1996, a steel hull shrimp trawler collided with a satellite well resulting in an explosion and fire. All personnel abandoned the vessel and were rescued. Safety devices operated properly and closed the well stream flow. Gas or liquid gas was shut in at the production facility. The fire was extinguished

with the tire water system aboard the rescue vessel. The collision and subsequent explosion resulted in severe damage to the satellite well.

### **Total Benefit Estimate for Fixed Facilities**

The total estimated benefits for part 143 are \$3 million annually. This estimate represents the quantifiable benefits from lifesaving, fire-fighting, and fire-protection equipment.

### **Qualitative Benefits**

Many proposed requirements were difficult to quantify but, if implemented, should provide benefits to industry through a safer work environment, decreased risk of death, injury, or property damage. Here are some examples.

- Training. When personnel are trained 1) to recognize hazards in the workplace, the risk of incident due to lack of preparedness decreases; 2) to properly and wear appropriate personal protective equipment, the risk of injury decreases; and 3) to know the methods and procedures to avoid exposure, the risk of contamination from blood-borne pathogens or other infection material decreases.
- Protective equipment, guards, warning signs, and hazardous communication program. Conducting a noise level survey or otherwise identifying hazards, posting appropriate warning signs, and providing appropriate personal protective equipment will promote a safer work environment.
- Offshore Competent Person and confined-space entry program. Having a trained Offshore Competent Person to recognize confined space and the dangers they may contain, to test the space, to identify restrictions for working in the space, and to ensure that personnel conduct confined-space entry in accordance with the written program in § 142.375, the risk of property damage, injury, or death resulting from an incident within a confined space will decrease.
- Training and drills. When drills are conducted regularly and personnel are trained in lifesaving procedures, survival when overboard, use of lifesaving equipment, and duties assigned under the station bill, the risk of injury, death, or property damage is diminished in the event of emergencies. When emergency situations occur, the training will minimize confusion and human error as people follow the procedures they have learned and practiced.
- Maintenance, equipment inspection, and weight testing. Maintenance and equipment inspection ensures proper function in the event of emergency. Weight testing will ensure survival craft falls are operational and ready for emergency use. When equipment is operating properly and used by trained personnel following established procedures, the risk of injury, death, and property damage is diminished.
- Lifesaving equipment and immersion suits. Maintained and operational lifesaving equipment will increase the probability of rescue. Immersion suits will increase the probability of survival in the event personnel spend time in cold water.

- Fire-fighting, fire-protection, fire-extinguishing equipment, fire main systems, fire-extinguishing systems, structural fire protection, and emergency lighting and power systems. Fireman's outfits, fire axes, fire main systems and fire-extinguishing systems will greatly increase the probability that fire is contained, controlled, and extinguished in a timely manner. Detection and alarm systems will provide fast, effective notification to personnel so they can act immediately as trained, either fighting the fire or evacuating the facility. Structural fire protection will increase safety and slow the spread of fire. Emergency lighting and power systems may provide power in the event a fire damages the main power generator, keeping lights, alarms, and communication systems operational. These things would decrease the risk of injury or death and decrease property damage.
- In-service inspection plan for floating facilities. Currently a floating facility must undergo drydocking every 2 years. The option to use an in-service inspection plan would allow the facility to remain on station during its field depletion lifetime. Current technology results in the location of larger oil fields, requiring longer on station time for depletion. It is costly to shutdown operations, undergo drydocking, and return to station to resume operations. In-service inspection will ensure an adequate level of safety while allowing the facility to continue production.

### **Total Proposed Rule Benefit Estimate**

Total benefit estimate for this proposed rule over the 10-year period of analysis is \$71 million. This estimate reflects the outcome of the effectiveness measures and WTP values of the 47 accident cases found likely to benefit from the proposed requirements.

The following table illustrates the total quantifiable costs and benefits resulting from the implementation of this proposed rule. The ratios are derived using present value benefits and costs for the 10-year period of 1999 through 2009. See Appendix C for present value benefits and costs.

**Table 14. Benefit – Cost Ratios (PV)**

	<b>Benefit</b>	<b>Cost</b>	<b>Ratio (B/C)</b>
Part <b>142</b>	\$50,169,071	\$4,766,062	10.5-to-1
Part <b>143</b> (total)	\$20,809,236	\$75,218,951	.28-to-1
Lifesaving	\$16,173,300	\$35,792,953	.45-to-1
Fire fighting	\$4,635,936	\$22,960,272	.20-to-1
Other*	\$0	\$16,465,726	0-to-1
Part <b>144</b>	Defined qualitatively	\$1,130,200	N/A
Part <b>145</b>	Defined qualitatively	\$112,409	N/A
Part <b>146</b>	Defined qualitatively	\$710,266	N/A
Total Parts	\$70,978,307	\$81,937,888	.87-to-1

\* We found zero (0) quantifiable benefit for the “other” portion of Part 143. However, we include a discussion of qualitative benefits.

Accumulated present value benefits attributable to the proposed rule are estimated to total **\$70,978,307** for the IO-year period (see Appendix C, Table 3). Accumulated present value costs to industry attributable to the proposed rule are estimated to total **\$81,937,888** for the lo-year period (see Appendix C, Table 2).

## **SMALL ENTITIES IMPACT**

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) the Coast Guard must consider whether this proposed rule, if adopted, will have a significant economic impact on a substantial number of small entities. Small entities include small businesses, not-for-profit organizations that are independently owned and operated and are not dominant in their fields. and governmental jurisdictions with populations of less than 50,000.

This proposed rule considered impacts for small business owners and operators of OCS units, such as fixed and floating facilities and foreign vessels engaged in OCS activity that are held by small companies. Based on the Small Business Administration’s classification, a small entity in the oil and gas extraction industry is a company with 500 employees or less. A MMS report (dated Feb. 27, 1998) that addresses small entities regulated under its offshore program identifies approximately 130 owners or operators of OCS units. Of these, we estimate 13 (10 percent) are small entities.

While an entity connected to this industry is classified as small based on its number of employees, an enormous monetary effort is essential to develop even the smallest of fixed facilities. The following table shows an estimate of the project cost of developing an oil field.

**Table 15. Cost of fixed facility development.**

<b>Platform</b>	<b>Cost to develop</b>
Shallow Fixed Platform	\$200 million
Mid-Sized Fixed Platform	\$400 million
Large Deep Water Platform	\$800 million

The maximum cost an owner or operator of a facility or vessel might incur to comply with the proposed regulation is shown in Table 16 as implementation or one-time costs, recurring costs, and total costs extending the 10-year period of analysis. This maximum cost would only apply if a facility were not currently in compliance with any of the proposed requirements. Total cost to any of these facilities over a 10-year period is determined to be less than 1 percent of development cost of a fixed facility.

There are currently 513 OSV's owned by approximately 170 individual companies. Of these 170 companies, we estimate approximately 90%, or 153, are small entities. For those vessels not in compliance with any of the proposed measures, the total 10-year present value of the cost is expected to be \$3,317 dollars (Table 16). Current (1999) day rates for these vessels depend on the size of the vessel, but are in the \$2,500 to \$6,000 range. Therefore, the cost of this rule over the next 10-years for an OSV not in compliance is approximately the cost of one day of operation.

There are currently 190 MODU's and MIDU's operating on the OCS owned by approximately 15 individual companies. Of these companies, no more than 2 are small entities. For vessels not in compliance with any of the proposed measures, the total 10-year present value of the cost ranges from \$43,792 for MODU's to \$76,580 for MIDU's (Table 16). The day rate for MODU's vary from \$30,000 to \$180,000. Therefore, the cost of this rule over a 10-year period is about the cost of one day of operation. The day rate for MIDU's range from \$10,000 to \$15,000. Therefore, the cost of this rule over a 10-year period ranges from about 5 to 8 days of operation.

**Table 16. Maximum costs of proposed rule per facility.**

<b>OCS Facility Type</b>	<b>Implementation One-Time</b>	<b>Recurring</b>	<b>Costs (10-Year Present Value )<sup>15</sup></b>
Manned Fixed	\$287,445	\$3,855	\$292,113
Floating	\$73,010	\$44,770	\$340,838
New Builds ~ Manned Fixed	\$414,945	\$0	\$387,799
Foreign Vessels	\$2,550	\$1,275	\$10,147
MIDUs	\$39,338	\$6,539	\$76,580
MODUs	\$33,110	\$2,110	\$43,792
OSVs	\$780	\$425	\$3,317

To help offset burdens on small businesses caused by this proposed regulation, the Coast Guard has included several measures to accommodate small business needs and provide flexibility to small entities affected by this rulemaking.

- The Coast Guard would allow a floating facility to use an in-service inspection plan in place of the 2-year drydocking requirement. This would allow a floating facility to remain on station during its field depletion lifetime. This is a cost saving measure considering the effort involved in moving an operational floating facility.
- All lifesaving equipment on an existing fixed facility may be continued in use and need not meet the proposed requirements if it has been accepted by the OCMI for use on the facility. However, if the lifesaving equipment is replaced or the facility undergoes major repairs, alterations, and modifications, the new lifesaving equipment must meet the new requirements. This flexibility would businesses from having to purchase new lifesaving equipment upon the effective date of this rule.
- Existing lifeboats on any fixed facility would not need to meet the proposed lifeboat requirement provided it is modified to include self-righting capability and an onload/offload release mechanism within 2 years of the effective date of this final rule. If the existing lifeboats already meet the aforementioned requirement, then the need for a rescue boat or lifeboat meeting the rescue boat requirements is not required. Survival craft and its davit and winch also have exemption, which would lessen the regulatory burden. The expense of modifying a lifeboat would be less burdensome than purchasing a new lifeboat. If a new lifeboat is purchased, the cost may be phased-in over a 2-year period.
- For fire-fighting and fire-protection equipment, manned fixed facilities would have a 2-year phased-in period to meet the proposed requirements.

<sup>15</sup> Costs were obtained from the Itemized Industry Cost Tables 3 through 7 and applied per facility type.

- Accommodation modules. temporary accommodation modules and temporary accommodation modules that are part of a platform/workover package on existing fixed facilities would be exempt from structural fire protection requirements.
- Existing helicopter landing deck fire protection systems on manned fixed facilities would have a 2-year exemption period, after the effective date of the final rule. to be used without having Coast Guard equipment approval.
- The fire main system required under this proposed rulemaking for manned fixed facilities include an option whereby it may be part of the required MMS firewater system. This flexibility would lessen the burden involved with this requirement.
- Fire drills and emergency evacuation or emergency drills may be conducted in sequence as long as all functions required for each drill are performed. This would provide small businesses an opportunity to minimize the disruption to production operations thereby decrease potential costs.

The Coast Guard has given consideration to small entities and others affected by this proposed rule. Due to the flexibility provided by the alternatives, the Coast Guard certifies under 5 U.S.C. 605(b) that if implemented, the proposed rule would not have a significant economic impact on a substantial number of small entities.

## **ASSISTANCE FOR SMALL ENTITIES**

Under section 213(a) of the Small Business Regulatory Enforcement Act of 1996 (Pub.L. 104-121), the Coast Guard must help small entities understand the proposed rule so they can determine how the rule affects them and how they can participate in the rulemaking process. The proposed rule will provide small businesses or organizations an opportunity to comment and will list a point of contact for any questions on the proposed rule's provisions and its options for compliance. We will provide regional Small Business Development Centers (SBDC's) with copies of the final rule for further distribution.

## **COLLECTION OF INFORMATION**

Under regulations for the Paperwork Reduction Act of 1995 in 5 CFR 1320.3(c), "collection of information" is defined to include reporting, recordkeeping, monitoring, posting, labeling, and other similar actions. This proposal will create new collection-of information requirements. The Coast Guard is in the process of submitting the recordkeeping requirements to the Office of Management and Budget (OMB) for review and approval under section 350(h) of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.).

### **Summary of the collection of information**

This proposed rule requires the owner or operator of an OCS facility or a foreign vessel engaged in OCS activity to meet standard design requirements as well as report or record information that is necessary for the safe operation of OCS facilities or foreign vessels. This



includes: (1) confined-space entry documentation; (2) in-service inspection plans; (3) floating facility plan approval; (4) design basis report; (5) design certification; (6) fire drill report; (7) report of lifesaving equipment; (8) weight testing written attestment; (9) record of fire-fighting equipment tests and inspections; (10) emergency evacuation plan for MIDUs; and (11) letter of compliance for MIDUs and foreign vessels. These recordkeeping and reporting requirements are consistent with good commercial practices and the maintenance of vital equipment.

The primary use of this information is to determine if an OCS facility or foreign vessel is in compliance with requirements. In cases where a casualty resulted, this information can be used to determine whether failure to meet these regulations contributed to the casualty. Additionally, the information is necessary to implement the Best Available and Safest Technology concept of Section 21 of the Outer Continental Shelf Lands Act. The Coast Guard has no specific plan to collect this data for statistical analysis.

### ***Justification Summary***

#### **1. Circumstances which make the collection of information necessary.**

**Confined-space entry documentation:** This collection consists of the offshore confined-space entry permit, confined-space entry certificate of training, and offshore competent person certificate. This information is necessary to ensure proper training and preparedness while working in a confined space.

**In-service inspection plan:** This information is necessary to ensure floating facilities are in compliance with biennial inspection for certification and renewal of a Certificate of Inspection.

**Floating facility plan approval:** This information is necessary to ensure floating facilities are in compliance with Coast Guard design and equipment standards and an equivalent level of safety for all OCS personnel.

**Design basis:** This collection requirement will provide the Coast Guard with information to review and approve novel or unconventional designs for floating facilities.

**Design certification:** The Coast Guard requires that a signed letter of certification be submitted to ensure that a new fixed facility is in compliance with regulations.

**Fire drill report:** A written report on whether a fire drill has or has not taken place is necessary information for the Coast Guard. This maintained collection of information assists the Coast Guard in determining that an OCS facility is in compliance with required safety regulations.

**Report of lifesaving equipment record:** A report of the inspection of lifesaving equipment, including a statement as to the condition of the equipment, must be recorded in the facility's official logbook. This collection of information is necessary for the Coast Guard to ensure that the lifesaving equipment is complete and in good order.

**Weight testing written attestment:** The trained person supervising the weight testing must attest in writing that tests have been performed in accordance with Coast Guard regulations.

**Record of fire-fighting equipment tests and inspections:** A record of each test and inspection of fire-fighting equipment must be maintained for at least 2 years. This maintained collection of information assists the Coast Guard in determining that an OCS facility is in compliance with required safety regulations.

**MIDU - emergency evacuation plans:** This information is necessary to assist the Coast Guard in determining that MIDUs are in compliance with required safety regulations.

**Letter of compliance for MIDUs and foreign vessels:** The Coast Guard requires that a letter of compliance is issued to ensure compliance with regulations.

## 2. Estimate of reporting and recordkeeping burden and costs to the respondents.

Item	Frequency of Response	Response Burden	Number of reviews per year	Cost per hour (A)	Hours per year (B)	Total cost (AxB)
Offshore Confined-space Entry Permit	Occasional	The burden of information submission is not an annual burden. Information must be available for inspection by Coast Guard. We estimate the hours per year based on 1 minute of response time per record.	3,948	\$33	674	\$22,242
Confined-Space Entry Certificate of Training	Occasional	The burden of information submission is not an annual burden. Information must be available for inspection by Coast Guard. We estimate the hours per year based on 1 minute of response time per record.	3,948	\$33	66	\$2,178
Offshore Competent Person Certificate	Occasional	The burden of information submission is not an annual burden. Information must be available for inspection by Coast Guard. We estimate the hours per year based on 1 minute of response time per record.	494	\$33	8	\$264
In-service inspection plan	Occasional	The burden of information submission is not an annual burden. Information must be supplied when a floating facility opts to use an in-service inspection plan rather than 2-year drydocking. We estimate this collection will affect two (2) floating facilities per year. We estimate the hours per year based on 3 hours of response time per inspection.	2	\$33	6	\$198
Floating facility: Plan Approval	Occasional	The burden of information submission is not an annual burden. Plans detailing new construction, major conversion, or relocation of a floating facility must be submitted to and approved by the OCMI. We estimate 8 hours of admin support per submission.	2	\$17	16	\$272
Design basis	Occasional	The burden of information submission is not an annual burden. Information must be supplied when an owner or operator plans to build a floating facility of a novel or unconventional design. We estimate two (2) submissions per year. We estimate the hourly rate based on a staff engineer's annual salary of \$40,000 and the hours per year based on 90 minutes per submission.	2	\$38	3	\$114
Design certification	Once	The burden of information is a one-time submission by a new facility. Information must be supplied before an owner or operator starts an installation of a new fixed facility. We estimate the hours per year based on 10 minutes of response time per report.	30	\$38	5	\$190
Fire drill report	Monthly	The burden of information submission is information that must be recorded monthly by the person in charge. A report must be submitted to the owner or operator. We estimate the hours per year based on 2 minutes of response time per report.	9,468	\$33	316	\$10,428

Item	Frequency of Response	Response Burden	Number of reviews per year	Cost per hour (A)	Hours per year (B)	Total cost (AxB)
Report of lifesaving equipment record	Monthly	The burden of information submission is a monthly report of inspection and a statement of the condition of each item of lifesaving equipment kept on the facility and made available for review by the Coast Guard. We estimate the hours per year based on 15 minutes of response time per report.	9,468	\$33	2,367	\$78,111
Weight testing written attestation	Every 5 years	The burden of information submission is the written attestation statement that must be completed every time a fall is replaced or every 5 years, whichever comes first. We estimate the hours per year based on 5 minutes of response time per report.	158	\$27	13	\$351
Record of fire-fighting equipment	Annual	The burden of information submission is a record of equipment that must be inspected annually; a record of each test must be maintained on the facility for at least 2 years. We estimate the hours per year based on 15 minutes of response time per report.	789	\$33	210	\$6,930
MIDU - Emergency Evacuation Plans	Occasional	The burden of information submission is not an annual burden. Initial EEP information is submitted and revisions are made when a MIDU moves to a new location or substantial changes are made. We estimate the hours per year based on 8 hours of admin support per new plan submission and 3 hours of admin support per renewal.	3 new	\$17	24	\$408
			1 renewal	\$17	3	\$51
MIDU - Letter of Compliance	Occasional	The burden of information submission is not an annual burden. We estimate the hours per year based on 15 minutes of response time per letter of compliance.	4	\$33	1	\$33
Foreign Vessel - Letter of Compliance	Occasional	The burden of information submission is not an annual burden. We estimate the hours per year based on 15 minutes of response time per letter of compliance.	35	\$33	9	\$297

3. Estimated annual reporting and recordkeeping hour burden to respondents or recordkeepers for collection of information.

The estimated reporting burden to industry is 3,734 hours.

4. Estimates of Annualized Costs to Federal Government.

<b>Item</b>	<b>Number of reviews per year</b>	<b>CG Hourly Rate<sup>16</sup> (A)</b>	<b>Hours per year (B)</b>	<b>Total Cost to Government (AxB)</b>
Offshore Confined-Space Entry Permit	3,948	\$32	66	\$2,112
Confined-Space Entry Certificate of Training	3,948	\$32	66	\$2,112
Offshore Competent Person Certificate	494	\$32	8	\$256
In-service inspection plan	2	\$32	2	\$64
Floating facility: plan approval	2	\$32	2	\$64
Design basis	2	\$32	2	\$64
Design certification	30	\$32	15	\$480
Fire drill report	789	\$32	66	\$2,112
Report of lifesaving equipment record	789	\$32	66	\$2,112
Weight testing written attestment	789	\$32	66	\$2,112
Record of fire-fighting equipment	789	\$32	66	\$2,112
MIDU –Emergency Evacuation Plans	4	\$32	4	\$128
MIDU - Letter of Compliance	4	\$32	.33	\$11
Foreign Vessels – Letter of Compliance	35	\$32	3	\$96
<b>Total Annualized Government Hours and Cost</b>			<b>434</b>	<b>\$13,835</b>

<sup>16</sup> Labor costs are from the USCG “Standard Rates” (COMDTINST 7310.1E)

## **UNFUNDED MANDATES REFORM ACT AND ENHANCING THE INTERGOVERNMENTAL PARTNERSHIP**

The Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531-1538) and E.O. 12875, Enhancing the Intergovernmental Partnership, (58 FR 58093, October 28, 1993) govern the issuance of Federal regulations that require unfunded mandates. An unfunded mandate is a regulation that requires a State, local, or tribal government or the private sector to incur direct costs without the Federal Government's having first provided the funds to pay those costs. This proposed rule would not impose an unfunded mandate.

## Appendix A

### Definition of Terms<sup>1</sup>

Accommodation module means a module with one or more “accommodation spaces” that is individually contracted for and may be used on one or more “facility”. The term does not include “temporary accommodation module” and “accommodation module that is part of a drilling/workover rig package.”

Accommodation module that is part of a drilling/workover rig package means a module with one or more “accommodation spaces” that is individually contracted for, that may be used on one or more “fixed facility” or “floating facility” and that is used as part of a “drilling/workover rig package.” The term does not include “accommodation module” and “temporary accommodation module.”

Accommodation space means living quarters, including sleeping, mess, medical treatment, recreational, toilet, washing, shower, and office spaces, and corridors serving living quarters.

Act means the Outer Continental Shelf Lands Act of 1953 (43 U.S.C.133 1 et seq.), as amended.

Approved means approved by the ‘Commandant,’ unless otherwise indicated.

Confined space means a space that may contain a dangerous atmosphere, including a space--

- (1) That has poor natural ventilation, such as a space with limited openings; or
- (2) That is not designed for continuous occupancy by personnel.

Drilling/workover rig package means a unitized or modular group of moveable components, including tanks, accommodation modules, and equipment for hoisting, rotating, pumping, and power generation, that is designed for engaging in drilling and workover operations supporting “exploration” or exploitation of “mineral” resources from a “facility” “MODU,” or “MIDU.”

Exploration means the process of searching for “minerals,” including, but not limited to--

(1) Geophysical surveys where magnetic, gravity, seismic, or other systems are used to detect or imply the presence of the “minerals;” and

(2) Any drilling, whether on or off of known geological structures, including the drilling of a well in which a discovery of oil or natural gas in paying quantities is made and the drilling of any additional delineation well after the discovery which is needed to

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<sup>1</sup> Words within “quotes” are defined terms. If the identified term does not appear within this appendix, it may be found in the notice of proposed rulemaking.

delineate any reservoir and to enable the lessee to determine whether to proceed with development and production.

Facility means (1) an installation or other device that is fixed or floating, is permanently or temporarily attached to the subsoil or seabed of the “Outer Continental Shelf,” and is erected for the purpose of “exploration,” “development,” or “production” of resources from the subsoil or seabed, or (2) an installation or other device (other than a “vessel”) that is erected for the purpose of transporting those resources. The term includes “fixed facilities” and “floating facilities.” The term does not include “mobile offshore drilling units,” “mobile inland drilling units,” “vessels,” pipelines, or deepwater ports (as the term “deepwater port” is defined in 33 U.S.C. 1502).

Fixed facility means a bottom founded “facility” permanently attached to the seabed or subsoil of the “OCS.” The term includes artificial islands, platforms, guyed towers, articulated gravity platforms, and other structures.

Floating OCS facility means a buoyant “facility,” is U.S. or foreign, securely and substantially moored so that it cannot be moved without a special effort. The term includes, but is not limited to, (1) “tension leg platforms,” “floating production systems,” “floating production storage and off loading systems,” and “spar buoys” that are site-specific and not intended for periodic relocation and (2) permanently moored semisubmersibles or shipshape hulls. The term does not include “mobile offshore drilling units,” “mobile inland drilling units,” and “vessels.”

Floating production system or FPS means a floating OCS facility that produces hydrocarbons from the well, processes them on board, but does not store them within its hull or directly offload them to another vessel.

Floating production storage and offloading system or FPSO means a “floating OCS facility” that produces hydrocarbons from the well, processes them on board, stores the processed products within its hull, and has the capability to offload them directly to another vessel.

Foreign, as used in the term foreign floating facility, foreign MODU, or foreign vessel, means a “floating OCS facility,” “MODU”, or “vessel” that is registered, documented, or certificated by a country other than the United States.

Hazardous material means a substance or material that, under normal conditions of use or in an emergency, poses a physical hazard or a health risk to persons in the workplace.

Helicopter fuel containment area means the area around a helicopter fuel storage tank, fuel transfer pump, and fuel hose reel that is designed to contain fuel in the event of a leak or spill.



Manned facility mean a “facility” on which at least one person occupies an “accommodation space” for more than 30 accumulative days in any successive 12-month period.

Marine evacuation system means an appliance designed to rapidly transfer a large number of people from an embarkation station by means of a passage to a floating platform for subsequent transfer to a survival craft.

Marine inspector means an individual designated as such by an “Officer in Charge, Marine Inspection,” to perform inspections of OCS units to determine whether or not the requirements of Coast Guard regulations or laws administered by the Coast Guard are met.

Mobile inland drilling unit or MIDU means a “vessel,” other than a “mobile offshore drilling unit” or a public vessel of the United States, that is capable of engaging in drilling operations for “exploration” or exploitation of subsea resources and is designed and intended for use in U.S. state waters, rivers, inland lakes, bays or sounds.

Mobile offshore drilling unit or MODU means a “vessel,” other than a “mobile inland drilling unit” or public vessel of the United States, that is capable of engaging in drilling operations for “exploration” or exploitation of subsea resources.

Naturally occurring radioactive material or NORM means a nuclide that is radioactive in its natural physical state (i.e., not man-made) and that may occur during an “OCS activity” not expressly designed to produce radiation.

OCS activity means any activity that occurs on the “Outer Continental Shelf” and is associated with the “exploration” for, or “development” or “production” of, “minerals.”

OCS unit means a “fixed facility,” “floating facility,” “MODU,” “MIDU,” or “vessel,” U.S. or foreign engaged in OCS activities.

Officer in Charge, Marine Inspection, or OCMI means an individual who commands a Marine Inspection Zone described in part 3 of this chapter and who is immediately responsible for the performance of duties with respect to inspections, enforcement, and administration of regulations governing “OCS units.”

Offshore competent person means an individual certified under §142.445 as trained and experienced in matters relating to confined-space entry.

#### Operator

(1) For a “vessel,” a charterer by demise or other person who is responsible for the operation, manning, and supplying of the “vessel;” or

(2) For a “facility,” “MODU,” or “MIDU,” the operator as defined in 30 CFR 250.2(gg).

Outer Continental Shelf or OCS means all submerged lands lying seaward and outside of the area of lands beneath navigable waters (as the term “lands beneath navigable waters” is defined in section 2(a) of the Submerged Lands Act (43 U.S.C. 1301(a)) and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control.

Owner means a person holding title to or, in the absence of title, other evidence of ownership of an “OCS unit.” However, the term does not include a person who holds evidence of ownership primarily to protect a security interest in, and who does not participate in the management or operation of, the “OCS unit.”

Paint locker means an enclosed space that is used primarily for the storage of paint and paint accessories but may be used for the storage of other flammable or combustible liquids, gases, or solids.

Person means an individual, association, partnership, consortium, joint venture, government entity, or private, public, or municipal firm or corporation.

Person in charge means the master or other individual designated as such by the “owner” or “operator” under § 143.20 of this chapter or 46 CFR 109.107.

Personnel means individuals who are employed by lease holders, permit holders, “operators,” “owners,” contractors, or subcontractors and who are on an “OCS unit” by reason of their employment.

Production means those activities that take place after the successful completion by the removal of “minerals,” including, but not limited to, the removal, field operations, transfer of “minerals” to shore by pipeline, operation monitoring, and well workover activities.

Rescue boat means a boat intended for use in rescuing persons from the water and to marshal survival craft.

Ring life buoy means a ring-shaped flotation device (intended) to be thrown from a facility to rescue personnel from the water.

Sleeping space means a space provided with bunks for sleeping.

Spar buoy means a “floating facility” that is held in place by a permanent mooring system, has a center of gravity below its center of buoyancy, and has a deep and narrow underwater shape designed to reduce vessel motions and excursions.

Survival craft means a craft capable of sustaining the lives of persons in distress after abandoning a unit. The term includes lifeboats, liferafts, life floats, and survival capsules, but does not include rescue boats, unless the rescue boats are also approved as lifeboats.

Temporary accommodation module means a module with one or more “accommodation spaces” that is individually contracted for, that may be used on one or more “facilities” and that is intended for use on a “facility” for short periods of time, not to exceed 12 months. The term does not include “accommodation modules” and “accommodation modules that are part of drilling/workover rig packages.”

Tension leg platform or TLP means a “floating OCS facility” that is held in place by tendons that facilitate a large buoyancy force to be used to provide reduced vessel motions and excursions.

U.S., as used in the term U.S. floating facility, U.S. MODU, or U.S. vessel, means a “floating OCS facility,” “MODU” or “vessel” that is registered, documented, or certificated under the laws of the United States.

## Appendix B

### Type of Units and Estimated Personnel

Type of unit	Number of units x estimated number of personnel*	Total number of personnel
Manned fixed facilities <sup>1</sup>	789 x 14	11,046
U.S. floating facilities <sup>1</sup>	7 x 40	280
Foreign floating facilities <sup>2</sup>	1 x 40	40
Mobile inland drilling units (MIDUs) <sup>2</sup>	4 x 40	160
U.S. mobile offshore drilling units <sup>1</sup> (MODUs)	118 x 40	4,720
Foreign MODUs <sup>1</sup>	68 x 40	2,720
Total <b>OCS</b> units	<b>987</b>	<b>18,966</b>
OSVs <sup>1</sup>	513 x 4	2,052
Industrial Vessels <sup>1</sup>	50 x 40	2,000
Foreign Vessels <sup>1</sup>	70 x 40	2,800
Total <b>OCS</b> Personnel		<b>25,818</b>

1 From query of the Coast Guard's Marine Safety Management System (MSMS) and Mineral Management Service's MMS databases.

2 Estimated number of personnel/facility/vessel population by Coast Guard (G-MSO).

## Appendix C

### Costs/Benefits

Table I. Total Costs of the Proposed Rule, 2000 - 2009

Year	First Year Costs	Two-Year Phase-In Costs		Recurring Costs		Total Industry Costs	Total Costs including Government Costs
		Lifesaving Equipment	Fire-fighting and Fire-protection Equipment	Existing	New Builds		
2000	8,261,332	14,780,500	6,872,110		3,825,000	33,738,942	124,288
2001		14,780,500	6,872,110	1,347,266	3,825,000	26,824,876	124,288
2002				1,347,266	3,825,000	5,172,266	124,288
2003				1,347,266	3,825,000	5,172,266	124,288
2004				1,347,266	3,825,000	5,172,266	124,288
2005				1,347,266	3,825,000	5,172,266	124,288
2006				1,347,266	3,825,000	5,172,266	124,288
2007				1,347,266	3,825,000	5,172,266	124,288
2008				1,347,266	3,825,000	5,172,266	124,288
2009				1,347,266	3,825,000	5,172,266	124,288
	<b>8,261,332</b>	<b>29,561,000</b>	<b>13,744,220</b>	<b>12,125,394</b>	<b>38,250,000</b>	<b>101,941,946</b>	<b>1,242,880</b>
<b>Totals</b>						<b>101,941,946</b>	<b>103,184,826</b>

## Appendix C

### Costs

**Table 2. Total industry Costs of Proposed Rule:  
Current and Present Values, 2000 - 2009**

Year	Costs		Accumulated Costs in Discounted (present value dollars
	Annual Costs	Discounted (present value: dollars	
2000	33,738,942	31,531,721	31,531,721
2001	26,824,876	23,429,886	54,961,607
2002	5,172,266	4,222,110	59,183,717
2003	5,172,266	3,945,897	63,129,614
2004	5,172,266	3,687,754	66,817,368
2005	5,172,266	3,446,499	70,263,867
2006	5,172,266	3,221,027	73,484,895
2007	5,172,266	3,010,306	76,495,200
2008	5,172,266	2,813,370	79,308,570
2009	5,172,266	2,629,318	81,937,888
<b>Total</b>	<b>101,941,946</b>	<b>81,937,888</b>	

Costs discounted to 1999 at 7 percent per annum.

**Table 3. Total Benefits of Proposed Rule:  
Current and Present Values, 2000 - 2009**

Year	Benefits		Accumulated Benefits in Discounted (present value dollars
	Annual Costs	Discounted (present value) dollars	
2000	10, 05,714	9,444,593	9,444,593
2001	10, 05,714	8,826,722	18,271,315
2002	10, 05,714	8,249,273	26,520,587
2003	10,105,714	7,709,601	34,230,188
2004	10, 05,714	7,205,234	41,435,423
2005	10,105,714	6,733,864	48,169,287
2006	10,105,714	6,293,331	54,462,617
2007	10,105,714	5,881,618	60,344,235
2008	10,105,714	5,496,839	65,841,074
2009	10,105,714	5,137,233	70,978,306
<b>Total</b>	<b>101,057,140</b>	<b>70,978,306</b>	

Benefits discounted to 1999 at 7 percent per annum

**Table 4. Part 142 Costs:  
Current and Present Values, 2000 - 2009**

Year	costs		Accumulated Costs in Discounted (present value dollars
	Annual Costs	Discounted (present value) dollars	
2000	3,451,170	3,225,393	3,225,393
2001	253,025	221,002	3,446,394
2002	253,025	206,544	3,652,938
2003	253,025	193,032	3,845,970
2004	253,025	180,403	4,026,373
2005	253,025	168,601	4,194,974
2006	253,025	157,571	4,352,546
2007	253,025	147,263	4,499,808
2008	253,025	137,629	4,637,437
2009	253,025	128,625	4,766,062
<b>Total</b>	<b>5,728,395</b>	<b>4,766,062</b>	

Costs discounted to 1999 at 7 percent per annum.

**Table 5. Part 142 Benefits:  
Current and Present Values, 2000 - 2009**

Year	Benefits		Accumulated Benefits in Discounted (present value dollars
	Annual Costs	Discounted (present value) dollars	
2000	7,142,947	6,675,651	6,675,651
2001	7,142,947	6,238,927	12,914,578
2002	7,142,947	5,830,772	18,745,350
2003	7,142,947	5,449,320	24,194,670
2004	7,142,947	5,092,822	29,287,493
2005	7,142,947	4,759,647	34,047,140
2006	7,142,947	4,448,268	38,495,409
2007	7,142,947	4,157,260	42,652,669
2008	7,142,947	3,885,290	46,537,959
2009	7,142,947	3,631,112	50,169,071
<b>Total</b>	<b>71,429,470</b>	<b>50,169,071</b>	

Benefits discounted to 1999 at 7 percent per annum.

# Appendix C

## Costs

**Table 6. Part 143 Costs:**  
**Current and present values, 2000 - 2009**

Year	costs		Accumulated Costs in Discounted (present value dollars
	Annual Costs	Discounted (present value dollars	
2000	29,923,045	27,965,463	27,965,463
2001	26,307,110	22,977,649	50,943,111
2002	4,654,500	3,799,458	54,742,570
2003	4,654,500	3,550,896	58,293,466
2004	4,654,500	3,318,594	61,612,060
2005	4,654,500	3,101,490	64,713,550
2006	4,654,500	2,898,589	67,612,138
2007	4,654,500	2,708,961	70,321,100
2008	4,654,500	2,531,740	72,852,839
2009	4,654,500	2,366,112	75,218,951
<b>Total</b>	<b>93,466,155</b>	<b>75,218,951</b>	

Costs discounted to 1999 at 7 percent per annum.

**Table 7. Part 143 Benefits:**  
**Current and Present Values, 2000 - 2009**

Year	Benefits		Accumulated Benefits in Discounted (present value dollars
	Annual Costs	Discounted (present value) dollars	
2000	2,962,767	2,768,941	2,768,941
2001	2,962,767	2,587,795	5,356,737
2002	2,962,767	2,418,500	7,775,237
2003	2,962,767	2,260,281	10,035,518
2004	2,962,767	2,112,412	12,147,930
2005	2,962,767	1,974,217	14,122,146
2006	2,962,767	1,845,062	15,967,209
2007	2,962,767	1,724,357	17,691,566
2008	2,962,767	1,611,549	19,303,115
2009	2,962,767	1,506,121	20,809,236
<b>Total</b>	<b>29,627,670</b>	<b>20,809,236</b>	

Benefits discounted to 1999 at 7 percent per annum.

**Table 6(a). Lifesaving Equipment in Part 143:**  
**Current and Present Values, 2000 - 2009**

Year	Costs		Accumulated Costs in Discounted (present value) dollars
	Annual Costs	Discounted (present value) dollars	
2000	17,003,217	15,890,857	15,890,857
2001	17,832,718	15,575,787	31,466,644
2002	829,500	677,119	32,143,763
2003	829,500	632,822	32,776,584
2004	829,500	591,422	33,368,006
2005	829,500	552,731	33,920,737
2006	829,500	516,571	34,437,308
2007	829,500	482,777	34,920,085
2008	829,500	451,193	35,371,278
2009	829,500	421,676	35,792,953
<b>Total</b>	<b>41,471,935</b>	<b>35,792,953</b>	

Costs discounted to 1999 at 7 percent per annum.

Costs include subparts F and I

**Table 7(a). Lifesaving Equipment in Part 143 Benefits:**  
**Current and Present Values, 2000 - 2009**

Year	Benefits		Accumulated Benefits in Discounted (present value dollars
	Annual Costs	Discounted (present value) dollars	
2000	2,302,714	2,152,069	2,152,069
2001	2,302,714	2,011,280	4,163,349
2002	2,302,714	1,879,701	6,043,049
2003	2,302,714	1,756,729	7,799,779
2004	2,302,714	1,641,803	9,441,582
2005	2,302,714	1,534,396	10,975,978
2006	2,302,714	1,434,015	12,409,992
2007	2,302,714	1,340,201	13,750,193
2008	2,302,714	1,252,524	15,002,717
2009	2,302,714	1,170,583	16,173,300
<b>Total</b>	<b>23,027,140</b>	<b>16,173,300</b>	

Benefits discounted to 1999 at 7 percent per annum

# Appendix C

## Costs

**Table 6(b). Fire-fighting and Fire-protection Equipment Costs in Part 143: Current and Present Values, 2000-2009**

Year	costs		Accumulated Costs in Discounted (present value dollars)
	Annual Costs	Discounted (present value) dollars	
2000	8,372,110	7,824,402	7,824,402
2001	8,372,110	7,312,525	15,136,927
2002	1,500,000	1,224,447	16,361,374
2003	1,500,000	1,144,343	17,505,717
2004	1,500,000	1,069,479	18,575,196
2005	1,500,000	999,513	19,574,709
2006	1,500,000	934,125	20,508,834
2007	1,500,000	873,014	21,381,847
2008	1,500,000	815,901	22,197,748
2009	1,500,000	762,524	22,960,272
<b>Total</b>	<b>28,744,220</b>	<b>22,960,272</b>	

Costs discounted to 1999 at 7 percent per annum.

**Table 7(b). Fire-fighting and Fire-protection Equipment Benefits in Part 143: Current and Present Values, 2000-2009**

Year	Benefits		Accumulated Benefits in Discounted present value dollars
	Annual Costs	Discounted (present value) dollars	
2000	660,053	616,872	616,872
2001	660,053	576,516	1,193,388
2002	660,053	538,800	1,732,188
2003	660,053	503,551	2,235,739
2004	660,053	470,609	2,706,348
2005	660,053	439,821	3,146,169
2006	660,053	411,048	3,557,217
2007	660,053	384,157	3,941,373
2008	660,053	359,025	4,300,399
2009	660,053	335,537	4,635,936
<b>Total</b>	<b>6,600,530</b>	<b>4,635,936</b>	

Benefits discounted to 1999 at 7 percent per annum



# Appendix D

## MSIS and MMS Data

Effectiveness Measures - High (85%), Medium (50%) and Low (25%)

. more than one fatality or injury

MSIS Data MC Case ID	Injury (I), Fatality (F), or Missing (M)	None	Fall Arrest System	Color Coding of Signs	Guard Rails and Fencing	Training in Personal Protective Equipment	Warning Signs	Electrical Training	Rescue Boats	Fire-Extinguishing System	Fire Main System	Fire Detection and Alarm System	Ventilation System
MC92009077	F	MMS Match											
MC92009457	I	X											
MC92009457	F	MMS Match											
MC92014055*	I (8)	X											
MC92014088	I (2)	X											
MC92015147	I	X											
MC92016674	I		High										
MC92017716	M								Medium				
MC92018044	I	X											
MC92018547	F	X											
MC92019825	I	X											
MC92020181	I	X											
MC93000056	I	X											
MC93000456	I												High
MC93001041*	I (2)								High				
MC93001278	F	MMS Match											
MC93001771	I	X											
MC93006102	F	MMS Match											
MC93014816	I								High				
MC93015032	I												High
MC93015570	I												High
MC93016246	F	MMS Match											
MC93016385	I	X											
MC93019408	I	X											
MC93021186	I	X											
MC94004252	I												
MC94006831	F								High				
MC94004094	F	MMS Match											
MC94004746	F	MMS Match											
MC94008937	I	X											
MC94022094	F				High								
MC94024082	F	MMS Match											
MC94025757	I	X											
MC94025893	M												Medium
MC94026138	I		High										
MC94026279	I	X											
MC95001414*	I (3)												
MC95002100	F	X											
MC95003283	F	MMS Match											
MC95009031	I	X											
MC95010823*	I (2)	X											
MC95010823*	F	X											
MC95012761	I	X											
MC95014176*	F (2)	MMS Match											
MC95014272*	F (2)	MMS Match											
MC95018983	F	MMS Match											
MC96000501	M	MMS Match							High				
MC96006626	I	X											
MC96007223	F	MMS Match											
MC96007290	I	MMS Match			High								
MC96008553	F	MMS Match											
MC96014109	I		High										

# Appendix D

## MSIS and MMS Data

Effectiveness Measures • High (85%), Medium (50%) and Low (25%)

\* more than one fatality or injury

MSIS Data MC Case ID	Injury (I), Fatality (F), or Missing (M)	None	Fall Arrest System	Color Coding of Signs	Guard Rails and Fencing	Training in Personal Protective Equipment	Warning Signs	Electrical Training	Rescue Boats	Fire- Extinguishing System	Fire Main System	Fire Detection and Alarm System	Ventilation System
MC96015193	I	X											
MC96015572	I	X											
MC96018474	F	MMS Match							Medium				
MC97000907	F	MMS Match											
MC97000978	M	MMS Match							Medium				
MC97001268	M	X											
MC97004944	F	MMS Match											
MC97005450	I	X											
MC97007129	F	MMS Match											
MC97007269	F	MMS Match											
MC97017984	F	MMS Match											
MC98001768	I	X											
MC98002000	I (8)	X											
MC98006151	F	MMS Match											
MC98006634*	F (2)	MMS Match											
MC98007161	I	X											
MC98007827	I	X											
MC98007827	I	X											
MC98007827	F								Low				
MC98008434	F	MMS Match											
MC98011091	I	X											
MC98014585	I	X											
MMS Fatality Data	Injury (I), Fatality (F), or Missing(M)	None	Fall Arrest System	Color Coding of Signs	Guard Rails and Fencing	Training in Personal Protective Equipment	Warning Signs	Electrical Training	Rescue Boats	Fire- Extinguishing System	Fire Main System	Fire Detection and Alarm System	Ventilation System
3/36/92	F	X											
6/4/92	F		High										
10/12/92	F			Medium									
12/5/92	F	X											
12/11/92	F				High								
1/11/93	F			High									
2/12/93	F	X											
9/2/93	F		High										
2/18/94	F	X											
2/24/94	F	X											
3/7/94	F	X											
3/15/94	F	X											
3/28/94	F							High					
5/14/94	F	X											
7/20/94	F	X											
11/22/94	F	X											
11/23/94	F	X											
12/7/94	F		High										
1/19/95	F	X											
6/16/95	F								Low				
8/12/95	F				Low								
8/24/95	F	X											
11/25/95	F				Low								
11/27/95	F	X											
12/9/95	F		High										
2/21/96	F		High										
3/4/96	F	X											

# Appendix D

## MSIS and MMS Data

Effectiveness Measures - High (85%), Medium (50%) and Low (25%)

- more than one fatality or injury

MMS Fatality Data	Injury (I), Fatality (F), or Missing(M)	None	Fall Arrest System	Color Coding of Signs	Guard Rails and Fencing	Training in Personal Protective Equipment	Warning Signs	Electrical Training	Rescue Boats	Fire-Extinguishing System	Fire Main System	Fire Detection and Alarm System	Ventilation System
4/30/96	F				High								
6/4/96	F	X											
9/24/96	F	X											
11/28/96	F	X											
12/7/96	F	X											
12/9/96	F								Medium				
1/3/97	F				High								
1/18/97	F		Medium										
1/20/97	F				High								
3/11/97	F								Medium				
3/16/97	F					Low							
4/7/97	F		Medium										
5/21/97	F								Low				
5/24/97	F	X											
9/17/97	F			High									
12/10/97	F		Medium										
12/24/97	F	X											
2/6/98	F			Medium									
4/22/98	F		Medium										
5/10/98	F	X											
6/2/98	F								Low				
7/9/98	F								Low				
7/17/98	F	X											
8/20/98	F								Medium				
9/2/98	F						High	High					
10/10/98	F	X											
10/27/98	F	X											
12/23/98	F	X											

## **Appendix E**

### **Sample Accident Narratives** (Assigning of Effectiveness Measures)

#### **High Probability:**

MC93001278 (MSIS data): A crewmember on the WC 643A, fell to his death from the watermaker or production levels of the platform. Crewmember was pronounced dead by medevac doctor. Recommendation made to Chevron U.S.A. to amend safety policy to require removable railings.

If the area had been protected with guardrails or fences, there is a high likelihood the fall from the platform level may have been averted.

#### **Medium Probability:**

MC94025983 (MSIS data): An explosion occurred on JANEX RIG 7260 #1 located in Lake St. Catherine near Fort Pike, LA. A fire fueled by various flammable products including natural gas, erupted as a result of the explosion. Four workers were on or next to the platform when the explosion occurred; three safely evacuated, the other worker is missing and presumed dead.

A ventilation system equipped with a shut-down mechanism and an alarm when flammable gas, smoke, or hydrogen sulfide are detected would have provided earlier warning of the leaking gas. This may have decreased the likelihood of the casualty occurrence.

#### **Low Probability:**

June 16, 1995 (MMS data): Rig personnel were in the process of removing tie ropes for mooring supply work boats from the legs of the rig. The crane operator lowered a man by the port crane between the leg and the rig hull, down to the bottom of the leg so that he could disconnect the mooring ropes. The D-ring slipped past the safety latch and fell off of the crane fast-line ball hook. The man was wearing a work vest life jacket and a safety-riding belt. All operations were shut down and a search was launched. The body was found still attached to the riding cable.

There is a possibility that the use of a rescue boat may have expedited the search and rescue of the employee.